

913373

LIFE AND EXPERIENCES OF A BENGALI CHEMIST

PRAFULLA CHANDRA RÂY

CALCUTTA :
CHUCKERVERTTY, CHATTERJEE & Co., LTD.
15, COLLEGE SQUARE

LONDON :
KEGAN PAUL, TRENCH, TRÜBNER & Co., LTD.

1932

Published by
R. C. CHAKRAVARTI, M.Sc.,
for CHUCKERVERTY, CHATTERJEE & CO., LTD.,
15, College Square, Calcutta.

Printer : PRABHAT CHANDRA RAY,
SRI GOURANGA PRESS,
71/1, Mirzapur Street, Calcutta.

To
The Youth of India

This volume is affectionately inscribed
in the hope that its perusal may
in some measure stimulate
them to activities.

“ nothing extenuate,
Nor set down aught in malice : ” — *Othello*.

PREFACE

While a student at Edinburgh I found to my regret that every civilized country including Japan was adding to the world's stock of knowledge but that unhappy India was lagging behind. I dreamt a dream that, God willing, a time would come when she too would contribute her quota.

Half-a-century has since then rolled by. My dream I have now the gratification of finding fairly materialized. A new era has evidently dawned upon India. Her sons have taken kindly to the zealous pursuit of different branches of Science. May the torch thus kindled burn with greater brilliance from generation to generation !

The conditions and handicap under which this volume appears have been related in the concluding envoy of the book and need not be repeated here. In fact, I find to my dismay that this very year I have to tour some fifteen thousand miles across the length and breadth of this land in response to invitations from several Universities and organisations.

In these days of awakened national consciousness, the life story of a *Bengali* chemist smacks rather of narrow provincialism. As there are two or three chapters which relate exclusively to Bengal, I have been reluctantly compelled to substitute *Bengali* for *Indian*. It will be found, however, that most part of the subject matter is applicable to India as a whole. Even the economic condition of Bengal applies *mutatis mutandis* to almost any province in India.

A large mass of materials originally meant for this present volume has been left out, as it has already grown, I fear, to a disproportionate bulk. If circumstances prove favourable, a supplementary volume may come out later on. It is necessary to point out that the spellings of Indian names and places have been retained as given in the original sources. So dissimilarity is unavoidable.

I cannot conclude without expressing my deep debt of obligations to Mr. Hariprasad Bose who chivalrously took upon himself the task of revising the Manuscript and seeing it through the press ; indeed, it is not too much to say that but for his unremitting and ungrudging labour the volume could scarcely have appeared in its present form. I have also to express my sincere thanks to Mr. G. C. Sen, the Local Trade Intelligence Officer, who has always with his unfailing courtesy supplied me with information whenever required.

P. C. R.

October, 1932.

UNIVERSITY COLLEGE OF SCIENCE
AND TECHNOLOGY
CALCUTTA.

CONTENTS

PART I

AUTOBIOGRAPHICAL.

CHAPTER I.	
Birth, Parental Home, Ancestry, Early environment ...	1
CHAPTER II.	
Absentee Landlords—The Deserted Village—Water Famine— Villages Breeding Grounds of Cholera and Malaria ...	13
CHAPTER III.	
Education in Village—Removal to Calcutta—Description of Calcutta Past and Present ...	19
CHAPTER IV.	
Education at Calcutta ...	26
CHAPTER V.	
Departure for Europe—Educational Career in England— “Essay on India”—Tour in the Highlands ...	50
CHAPTER VI.	
Returning Home—Professor at Presidency College ...	76
CHAPTER VII.	
Bengal Chemical and Pharmaceutical Works ...	92
CHAPTER VIII.	
New Chemical Laboratory—Mercurous Nitrite—History of Hindu Chemistry ...	112
CHAPTER IX.	
Reminiscences of Gokhale and Gandhi ...	123
CHAPTER X.	
Second visit to Europe—Partition of Bengal—Impetus to Scientific Study ...	129
CHAPTER XI.	
Intellectual Renaissance in Bengal ...	140
CHAPTER XII.	
Dawn of a New Era—Original Scientific Researches in Bengal —Indians Debarred from Higher Educational Service ...	152
CHAPTER XIII.	
Original Research—Research Scholars—Indian School of Chemistry ...	160

CHAPTER XIV.

Indian School of Chemistry (<i>contd.</i>)—Retirement from the Presidency College—The Work of Prof. Watson and his pupils—Research Students—Indian Chemical Society ...	182
---	-----

CHAPTER XV.

University College of Science ...	196
-----------------------------------	-----

CHAPTER XVI.

Use and Misuse of Time ...	208
----------------------------	-----

CHAPTER XVII.

Life outside the Test tube ...	227
--------------------------------	-----

PART II

EDUCATIONAL, INDUSTRIAL, ECONOMIC AND SOCIAL.

CHAPTER XVIII.

Insane Craze for University Education ...	259
---	-----

CHAPTER XIX.

Industry precedes Technological Institute—The Great Illusion —Technology before Industry—The Cart before the Horse ...	316
---	-----

CHAPTER XX.

Industrial Enterprises ...	337
----------------------------	-----

CHAPTER XXI.

Gospel of Charka—Lament of a Spinner ...	361
--	-----

CHAPTER XXII.

Modern Civilization—Capitalism, Mechanization & Unemployment	379
--	-----

CHAPTER XXIII.

Economic Condition of Rural Bengal in the Sixties and Onwards	395
---	-----

CHAPTER XXIV.

Economic Condition of three Bengal Districts ...	412
--	-----

CHAPTER XXV.

Bengal—the Milch Cow—Drain of the Wealth of Bengal due to Political Subjection ...	428
---	-----

CHAPTER XXVI.

Bengal—the Milch Cow (<i>contd.</i>)—The Failure of the Bengalis and the Economic Conquest of Bengal by Non-Bengalis ...	440
---	-----

CHAPTER XXVII.

Caste System—Its baneful effect on Hindu Society ...	502
--	-----

CHAPTER XXVIII.

The Envoy ...	537
---------------	-----

INDEX ...	545
-----------	-----

PART I
AUTOBIOGRAPHICAL

P. 182, line 9, Rajendra Nath to be read as Rajendra Lal.

„ 313, „ 7, Lal Gopal „ „ „ „ Joy Gopal.

CHAPTER I

BIRTH, PARENTAL HOME, ANCESTRY, EARLY ENVIRONMENT

I was born on August 2, 1861. This year, it is interesting to note, is memorable in the annals of Chemistry for the discovery of thallium by Crookes. My native village is Raruli, in the district of Jessore (at present Khulna). It is situated on the banks of the river Kapotakshi, which follows a meandering course for forty miles (only 16 miles as the crow flies) till it reaches Sagardari, the birth place of our great poet Madhusudan Datta. And higher up lies the village of Polua Magura known of late years as Amrita-bazar, the birth place of Sisir Kumar Ghosh, the veteran journalist. The village adjoining Raruli on the north is Katipara, the residence of the Zemindars of the Ghosh family, from which came the mother of Madhusudan.¹ These two villages are often hyphenated together and called Raruli-Katipara.

My father was born a little over a century ago (1826). He learned Persian, which was then the court language, under a Maulavi (a Moslem teacher of Arabic and Persian), acquiring considerable proficiency in this tongue and also picking up a smattering of Arabic. He often used to say that, though he was born and brought up in an orthodox Hindu family, it was the *divan* of Hafiz that completely changed his mental outlook. He even used to partake secretly of the savoury dish of chicken-curry. It is scarcely necessary here to add that if any member of the family had come to know of it, he would have

¹ Janhavi Dasi, the mother of Madhusudan, was the daughter of Gouricharan Ghosh, Zemindar of Katipara.

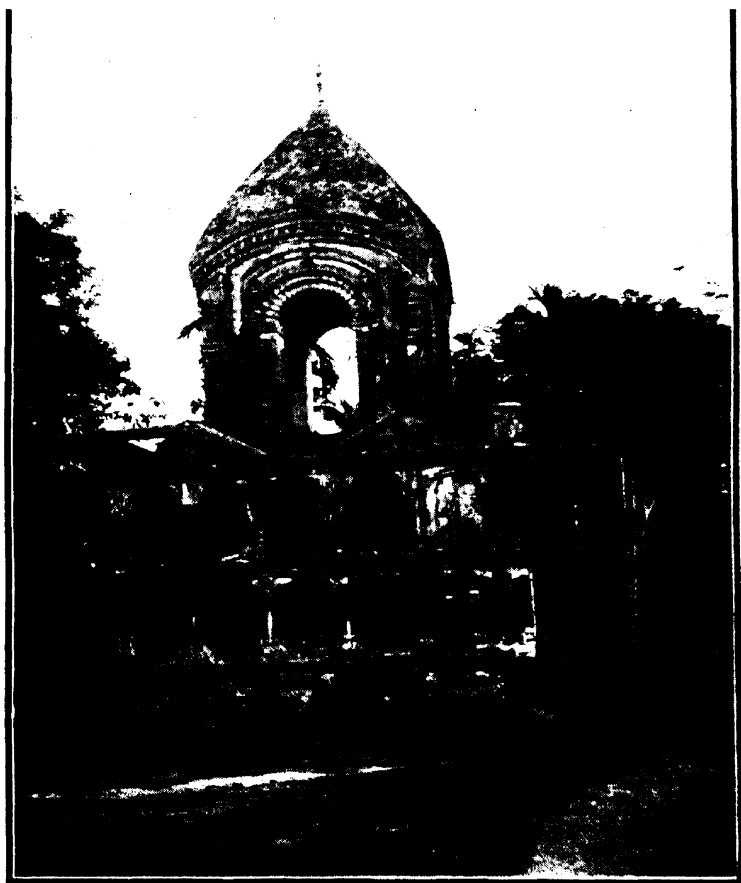
been shocked and scandalised at such conduct. After completing his education under the parental roof, my father was sent to Krishnagar (Nadia) about the year 1846, in order that he might have the benefit of an English education at the collegiate school, which had just been founded. While preparing for the junior scholarship examination he was among the fortunate ones who sat at the feet of the renowned and saintly teacher, Ramtanu Lahiri. As Captain D. L. Richardson was then Principal of Krishnagar College, my father, though not exactly a student of his, must have imbibed something of his spirit and fervour. I have still with me a copy of the *Lives of British Poets* by this pioneer educationist of Bengal. It is a book I have read over and over again and treasure as a priceless heirloom.

Had my father not been abruptly called away he would surely have made progress in the college department in due time and sat for the senior scholarship examination.² He had to give up his studies prematurely because he was the only surviving son of my grandfather, who held a Seristadarship at Jessore, a lucrative post in those days ; and there was no one at home to look after the family estates. Another reason seems to be that about this time Madhusudan Datta had embraced Christianity, which sent a thrill of horror into Hindu society. My grandfather feared that my father after imbibing the heretical notions then preached by the *alumni* of the old Hindu College might be led to renounce the faith of his ancestors.

Here I may allude for a moment to our family history in a setting of the political, social and economic conditions prevailing at the time. The Ray Choudhuris of Bodh-Khana,³ belong to a prosperous, enterprising, and adventurous stock. Many of its scions had held important appointments under the Nawabs

² These were pre-university days.

³ The curious reader may consult with advantage Prof. Satis Chandra Mitra's *History of Jessore and Khulna* (in Bengali).



TEMPLE AT KATIPARA.

of Bengal and got large grants of lands in the newly colonised *abads* (settlements) in the deltaic regions of Jessore.

The Muslim Pirs in the 14th, 15th, and 16th centuries, with the zeal of the Pilgrim Fathers, carried the banner of Islam to these quarters and planted colonies; and the very names of the places round about bear eloquent testimony to their zeal and activities, e.g. Islamkati, Mahmudkati,⁴ Hoseinpur, Hasnabad (i.e. Hosein Abad). Conspicuous among those Islamic path-finders stands the name of Khanja Ali, who built the famous "Sat Gambuj" or "Sixty domes" near Bagerhat about 1450 A.D. Some ten miles down Raruli on the river Kapotakshi is another structure which is also attributed to the above-named pioneer coloniser.

When, during the extension of cultivation into the Sundarban forest, some people were clearing the jungle along the banks of the Kapotakshi river, at a point about six miles south of Chandkati, they came upon an ancient mosque, close by the river-bank and they called the village by the name of Masjid Kur—"the digging out a mosque." The building, thus found, proclaims at first glance that it owes its origin to the same hand that built the "Sat Gambuz".

My remote ancestor migrated to this village at the time of the Emperor Jahangir or it may be a little later and held grants of land in several of the adjoining villages. My great-grandfather, Manik Lal Ray, rose to the position of Dewan of the Collector of Nadia (Krishnagar) and Jessore. In the early days of British rule, the Dewans, the Nazirs and Seristadars

⁴ *Kati* (lit. a log of wood) is added as a suffix to many clearances, which had been colonized in the Sundarbans after the cutting down of the trees peculiar to the jungles.

Cf. Westland: *Report on the District of Jessore*, p. 20; Hunter (W. W.) rightly says:

"The Bengali landholder delights to trace his origin to some remote ancestor who came from the North and cut down the jungle. The eponymous village here is still the man who dug the tank and ploughed up the adjacent fields".—*England's Work in India* (1880).

were the right-hand men of the British Collectors of land revenue and of Magistrates and Judges.

Lord Cornwallis, the author of the Permanent Settlement in Bengal, evidently prejudiced against the system of corruption and venality, which obtained under the Nawabs of Bengal and at the beginning of the East India Company's rule up to the time of Warren Hastings, practically excluded Indians from all the higher and lucrative posts in the administration. No doubt he had apparent justification for the course he adopted. Navakrishna, afterwards Raja Navakrishna, and the founder of the Sovabazar Raj family, Munshi of Robert Clive, drawing a nominal monthly pay of Rs. 60/-, spent nine lakhs of rupees on the occasion of his mother's Sradh (funeral ceremony), and nine lakhs of rupees in those days would represent at least half a crore (=£400,000) at the present day. The Dewan of Warren Hastings, Gangagobind Singh, who was the founder of the Paikpara Raj, accumulated immense wealth and acquired rich zemindaries by expropriating the older territorial magnates, while Kanta Mudi (Mudi—lit. a grocer), who harboured Warren Hastings in his petty shop at Cossimbazar at imminent risk of his own life, was not forgotten by his grateful protégé when he became the arbiter of the destiny of Bengal. Hastings sought out his old benefactor and showered rich rewards on him in the shape of escheated estates wrung out from the hapless owners who failed to meet the iniquitous exactions of the Company. It is unnecessary here to allude to the atrocities perpetrated by Gangagovind Singh and by Devi Singh, founder of the Nashipur Raj, at Rungpur, for they are familiar to the readers of Burke's *Impeachment of Warren Hastings*.

One might suppose that I am making a laboured apology for the ostracism of Indians that is justly regarded as a blot on the otherwise beneficent rule of Cornwallis.⁵ Nothing can

⁵ Cf. "It has been the opprobrium of our administration ever since the days of Lord Cornwallis", that "with the progress of our empire a blight comes over the prospects of the higher and more influential classes of native society", that "there is no room for their aspirations

be farther from my object. In fact, the remedy adopted proved worse than the disease. The Civil Servants, utterly ignorant of the language, manners and customs of the people were often helpless tools in the hands of their unscrupulous Indian subordinates, who would have been more than human, had they failed to take advantage of the enviable position they held. There would be, say, a failure of the crops and the unlucky Zemindar, trembling lest the rigorous enforcement of the "Sunset Law" would reduce him to abject penury at one stroke of the auction hammer, would apply to the Collector who in exercising his discretionary power was often guided by the Seristadar or Dewan ; the latter would throw his influence into the scale in proportion as his palm was greased. In criminal cases the decision of the Judge was also more or less coloured by the hints and suggestions of the Peshkar, and as there was no jury system, the importance of these underlings can well be

in our system of government; they sink down to one dead level of depression in their own land".—Marshman : *History of India*.

"It would be difficult to discover in history another instance of this ostracism of a whole people. The grandsons of the Gauls, who resisted Cæsar, became Roman senators. The grandsons of the Rajpoots, who opposed Babar in his attempt to establish the Mogul power and at the battle of Biana all but nipped his enterprise in the bud, were employed by his grandson, Akbar, in the government of provinces and the command of armies, and they fought valiantly for him on the shores of the Bay of Bengal and on the banks of the Oxus. They rewarded his confidence by unshaken loyalty to the throne, even when it was endangered by the conspiracies of his own Mahommedan satraps. But wherever our sovereignty was established in India the path of honourable ambition, and every prospect of fame, wealth and power, was at once closed on the natives of the country. This proscription was rendered the more galling by comparison with the practice of the native courts around where the highest prizes were open to universal competition".—*Ibid.*

"But we place the European beyond the reach of temptation. To the Native, a man whose ancestors perhaps bore high command, we assign some ministerial office, with a poor stipend of twenty or thirty rupees (£2 or £3) a month. Then we pronounce that the Indians are corrupt, and no race of men but the company's European servants are fit to govern them".—Sir Henry Strachey (1820).

guessed. Instances were by no means rare in which the conscience of the helpless Judge was in the safe custody of the Peshkar.

My great-grandfather, Manik Lal Ray was, as has already been said, a Dewan⁶ of the Collector of Krishnagar and later of Jessore a century ago, in which capacity his emoluments in the shape of *douceur* must have been enormous. When I was a child I used to hear fairy tales of the wealth amassed by him. Company's *sicca rupees* used to be periodically despatched home in big earthen pots swinging equipoised from the ends of a bamboo pole flung over the shoulders of trusty carriers. As the Nadia-Jessore Grand Trunk Road was infested with dacoits these pots were superficially covered with *batasa* (thin sugar puffs) to disarm all suspicion.

My grandfather Anandalal Ray was Seristadar of Jessore and added considerably to the family estates. He died suddenly of apoplexy at Jessore ; my father hurried to the place from Raruli but was too late to receive from his lips his parting message.

My great-grandfather must have piled up what may be regarded as a fortune, but the landed property he purchased about the year 1800 represented only a fraction of his wealth.

⁶ The term Dewan was used in a somewhat loose and comprehensive sense. Thus Dwaraka Nath Tagore, grandfather of Rabindranath, was the Dewan of "Nimak Chouki" that is, the Salt Toll house. Mr. Digby in the account prefixed to Ram Mohan Ray's translation of *Kena Upanishad and Abridgement of the Vedanta* says, "He (Ram Mohan) was afterwards employed as *Dewan* or principal native officer in the collection of revenues, in the district of which I was for five years (1809-14) Collector in the East India Company's Civil Service".—Miss Collet's *Life and Letters of Raja Ram Mohan Roy*, London, 1900, pp. 10-11.

"In Settlement work in those days, the trusted native Seristadars were, as a rule, the chief agents employed by the Collectors, who were guided to a large extent by their decisions and counsels".—Sivanath Sastri : *History of the Brahmo Samaj*, p. 12.

See also an article in the *Modern Review* by B. N. Bannerji, May-1930, p. 572.

Several explanations have been offered to account for the disappearance of his surplus wealth. When a mere child I often used to hear from the lips of the oldest surviving ladies of the family that my great-grandfather was one day playing chess when a letter was delivered to him ; he stopped for a moment, read it through and only heaved a deep sigh. There was, however, no visible manifestation on his countenance and he went on with the game as if nothing unusual had happened. It appears that the bank in which a considerable portion of his savings was deposited had failed.⁷ He was, however, as I have indicated, too shrewd a man to have placed all his eggs in one basket and he seems to have followed the custom of the good old days of hoarding his wealth underground or secreting it in the vaults in the ground floor or inside the pucca brick walls. As a matter of fact, one such empty vault I came across when I was a child.⁸ The family tradition is that my grand-

⁷ There is reason to believe that it was the banking house of Palmer & Co. the failure of which in 1829 involved in ruin several European and Indian depositors.

⁸ In England towards the end of the seventeenth century (1692) similar difficulties and risks existed as regards investments, hence the practice of hoarding was common. Cf. "We are told that the father of Pope, the poet, who retired from business in the city about the time of the Revolution, carried to a retreat in the country a strong box containing nearly twenty thousand pounds, and took out from time to time what was required for household expenses and it is highly probable that this was not a solitary case.

* * * * *

But, in the earlier part of the reign of William the Third, all the greatest writers on currency were of opinion that a very considerable mass of gold and silver was hidden in secret drawers and behind wainscots".—Macaulay : *History of England* (1896), vol. iv, p. 320.

In several villages in Bengal and Bihar and I believe in other parts of India as well, where the light of western "civilization" has not yet penetrated, the habit of hoarding savings underground still persists ; even in enlightened France this practice is at present in vogue. Cf. "The French peasant is still, after his immemorial habit, hoarding money in the woollen stocking under the floor of the house or burying in the ground."—*Daily Herald* (quoted in the Calcutta dailies, Feb. 19, 1932).

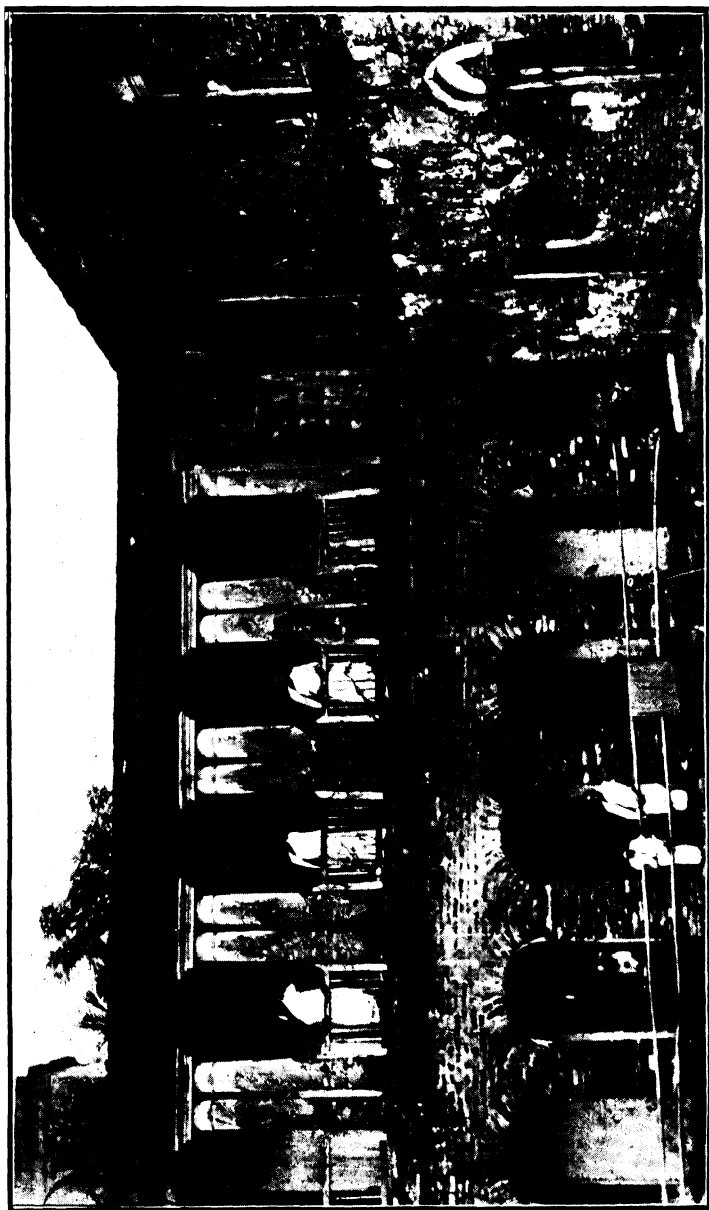
father knew the secret, but the abrupt termination of his life prevented it from being communicated to my father.

The upper story of the inner quadrangle of our ancestral house, still existing, has its doors armour-plated, so to speak ; i.e., coated with sheets of iron riveted with bolts, so that dacoits might not easily break open the doors, and a portion of it still goes by the traditional name—*malkhana* (lit. in Persian, treasure house). My father probed several places in the walls in search of the treasure but to no purpose and patches can still be recognised here and there in which new bricks and mortars have been inserted. Years after, when my father was involved in pecuniary embarrassment and the family estates began to be sold one after another, my mother, though singularly free from superstitious notions, considering the time in which she lived, sought the help of a *Guni* (lit. Sans., an accomplished man, adept or diviner) and according to his indication dug open a place underneath the staircase but to no purpose and to no little merriment on my part as I never had any faith in such divinations.

At the age of 25 or so, my father undertook the management of his estates. His intellectual equipment was of a high order. He knew Persian well and as I have already said had also a smattering of Arabic and Sanskrit. He had a fair knowledge of classical English literature and it was from his

Although Postal Savings Bank as also the Co-operative Credit Society's Bank is now available within easy reach of many villages, the old custom persists ; as H. Sinha observes :

"The big Bengali mahajans are also financed by *gucchits* or deposits from people who know and trust them. Even in these days of Telegraphic Transfers and Drafts issued by banks of undoubted status and of Remittance Transfer Receipts issued by the Government, considerable amounts are remitted through indigenous bankers. For one thing, organised banks have not penetrated to remote places where indigenous banking alone is carried on. Secondly, bank instruments written in English can appeal only to the very small percentage of the population who know that language. In short, the indigenous system survives in spite of its numerous defects because it fits in with the daily life of the people."—*Early European Banking in India*, p. 240.



INNER QUADRANGLE OF THE ANCESTRAL HOUSE.

lips that I heard for the first time in my life, when a mere boy, of such works as Young's *Night Thoughts*, and Bacon's *Novum Organum*. He was a regular subscriber to *Tatwabodhini Patrika*, *Vividhartha Sangraha*, the journal conducted by Rajendra Lal Mitra, *Hindu Patrika*, and *Amrita Bazar Patrika* and its fore-runner *Amrita Prabahini* and *Soma Prakasa*. Carey's translation of the *Holy Bible*, Mrityunjaya Vidyalankar's *Probodh-chandrika* and *Rajabali*, Lawson's *Paswawali* (Tale of Animals) and Krishna Mohan Banerjee's *Encyclopædia Bengalensis*⁹ were also on the shelves of his library. My great-grandfather was also evidently a man of a fair degree of culture, considering the age in which he lived, and a proof of it is afforded by the fact that he was a regular subscriber to *Samachar Darpana*, almost the first Bengalee journal started by the Serampore missionaries in 1818, and during my boyhood I found files of it rotting in the library). My father began his career like a country gentleman in the days of Fielding and he had many traits in common with Squire Allworthy. Being a man of means he could well afford to indulge his tastes ; he was much of Calcutta and mixed in the refined society of that city, made the acquaintance of such leading men as Jatindra Mohan Tagore, Digambar Mitra, Kristo Das Pal, and Iswar Chandra Vidyasagar. My father was also enrolled as a member of the British Indian Association in the early sixties of the last century. He was fond of music and could play on the violin with the skill of an *ostad* (adept). In the evenings he used to have regular musical soirées and later he was naturally drawn towards Sourindra Mohan Tagore and his Sangitcharyya (an expert teacher in music) Kshetra Mohan Goswami both of whom have done great service in the way of revival of Hindu music in Bengal. One of the first acts of my father, when he took up the management of his estates, was to dismantle the *sadar* (outer) quadrangle of the ancestral residence and build it anew. In architecture also

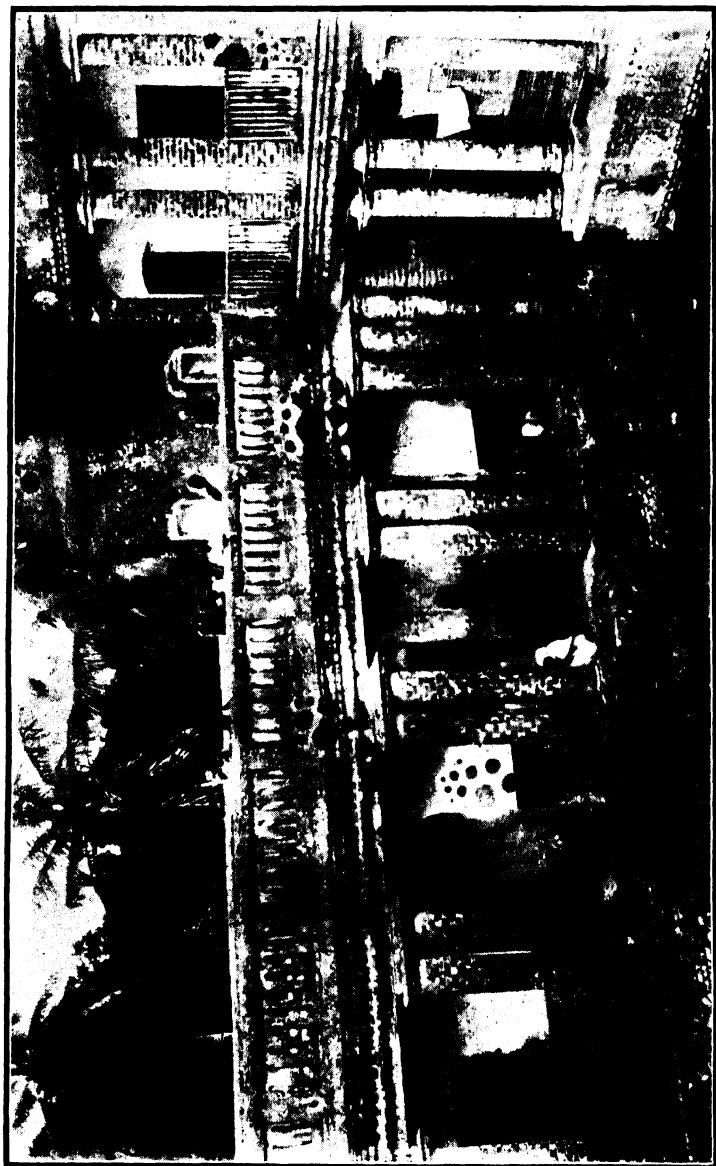
⁹ A bilingual reader in five parts (1843), dedicated to Lord Hardinge.

his æsthetic taste found ample scope. Digambar Mitra (afterwards Raja and C. S. I.), who purchased a Zemindari called Soladana adjacent to our village, partook of the hospitality of my father for a day or two and expressed his agreeable surprise at seeing a house with a furnished drawing room which might vie with any in Calcutta, though situated almost on the boundary of the Sundarbans.

As I have said above, my father settled down on his estates in the year 1850 i.e. eleven years before my birth. As he had imbibed the ideas of "Young Bengal", he was one of the pioneers of the educational movement in the district and almost the first girls' school was opened by him at Raruli ; side by side with this a Middle English School was also started. Seventy five years ago such schools were rare in most parts of Bengal and were the pride of the villages in which they were located. At present the district of Khulna alone boasts of as many as forty-five High English Schools teaching up to the Matriculation standard as also of two first grade colleges and a Girls' High School.

The economic revolution during my life-time, which is vivid and distinct to my mind's eye, should demand some attention here. But as it would break the thread of my narrative, a separate chapter has been reserved for it.

My father was heir to landed estates fetching an annual income of nearly Rs. 6000/- a year ; but it was only a fraction of the actual income enjoyed by the family for the previous two generations ; for my great-grandfather and grandfather had, as I have already said, held lucrative posts. As an instance of the additional property inherited by my father, it may be mentioned that on the occasion of his marriage my grandfather presented my mother with ornaments worth some ten thousand rupees ; the silver plate in his possession was also worth a good round sum. I remember seeing in my childhood several guests of position, being served simultaneously on silver plates, dishes, and cups. My mother used to show me with conscious pride gold *mohurs* with the stamp of the Mogul Emperors. A



OUTER QUADRANGLE OF THE ANCESTRAL ABODE.

portion of her ornaments was sold off with my mother's consent so that it might be converted into a profitable investment. In fact, a Zemindary was purchased in her own name. My father, who was evidently familiar with the principles of political economy, often used to say that it was sheer folly to lock up savings in jewellery as they brought in no return. As he also had considerable cash in hand, he opened a money-lending business, which for several years was a profitable concern. In those days, there was no safe investment for people of limited income and it was a constant source of anxiety with them how to guard their life's savings against theft or robbery. As a result it was the prevalent custom to bury ornaments and cash underground.

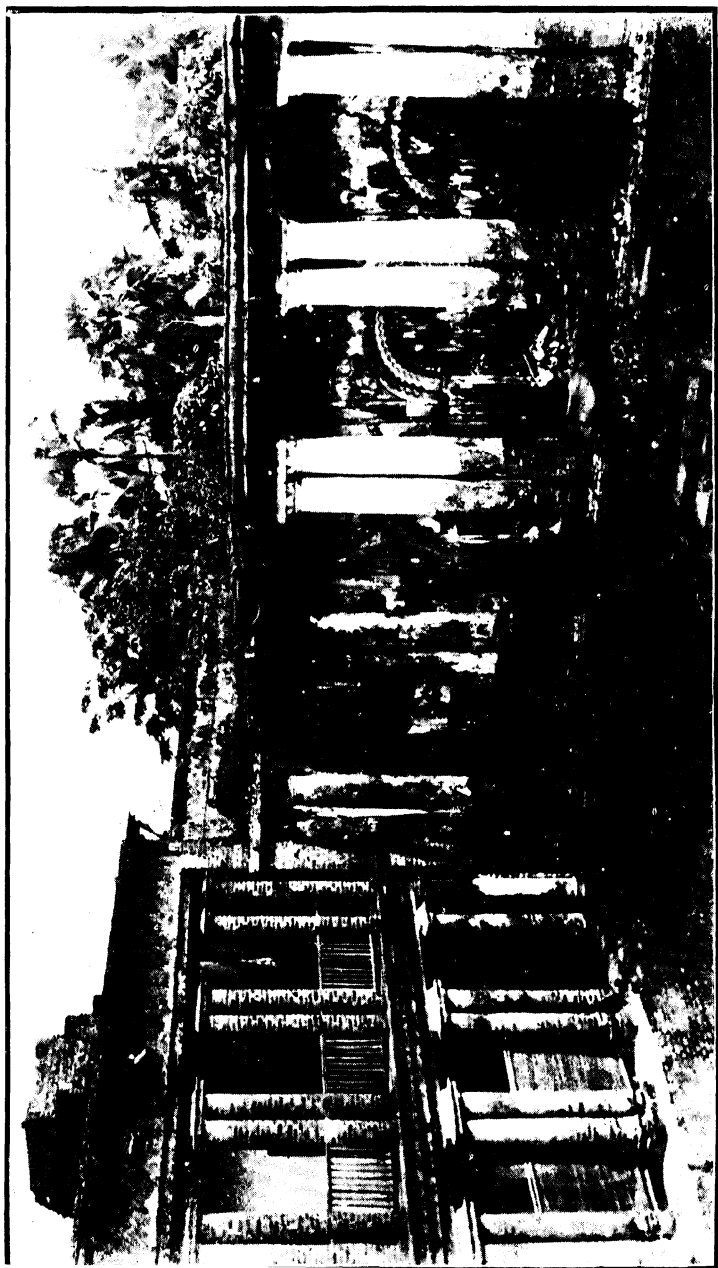
When, therefore, my father opened a loan office on his own account, his co-villagers flocked to him with their savings, to be deposited with him at a fixed rate of interest ; the more so as he had a high reputation for probity. The amount of fluid money in my father's hand was thus considerable. Years after he came to grief over this new venture. My father's total income, all told, amounted to about ten thousand rupees a year ; but on what may today appear to be an insignificant sum, he lived in almost regal splendour. There were several circumstances that contributed to this enviable position.

If a circle be drawn round our ancestral abode as the centre and with a radius of four miles, most of our estates would be found within it. Thus my father lived, moved and had his being in the midst of his own tenantry. The family mansions consisting of a pile of two quadrangles—one for the *Andarmahal* (zenana or inner-apartment) and the other for the *Sadarmahal* (outer quadrangle) and the *Chandimandap* (where Pujas are celebrated) with its double row of pillars, added not a little to the exterior grandeur.

I have already stated that my father's income all told seldom exceeded Rs. 10,000 a year, but it is evident that Rs. 10,000 in those days represented at least Rs. 50,000 or half a lakh of the present times. The economic condition of

Ireland in the middle of the eighteenth century is no doubt fairly reflected in Goldsmith's village pastor "passing rich with forty pounds a year". It will also be thus easily understood why my father could live with the pomp and munificence of the English country squires in the 18th century living in the midst of their tenants. There were half-a-dozen *paiks* and *burkandazs* carrying long, polished bamboo poles and clubs posted at the *Suddurdarwaza*. The Kutchery over which my father presided from eight till noon bore a brisk and lively appearance. On one side sat the *Munshi*, on the other the *Khajanchi* and there were also *Naibs* and *Gomastas* receiving dues from or settling accounts with the ryots and borrowers.

The Kutchery was also a regular court for the administration of justice, which was dispensed in a rough and ready manner, but on the whole to the satisfaction of the parties ; as the evidence of the plaintiff and the defendant was taken in open court so to speak and in an *entourage* which had local knowledge of the matter in dispute, any attempt to throw dust in the eyes of the deciding officer by bringing in false witnesses was seldom successful nor was there any such temptation to do so as is found in our modern law-courts. The system was no doubt open to reproach as even in those days there were not many resident zemindars and even these had to be approached often through corrupt and unscrupulous *Naibs* who were not above temptation, whose palms had often to be greased by the adversary or the defendant. The system in vogue had however one commendable feature. Justice (or injustice) was dealt out in a rude and patriarchal but summary and expeditious manner. The matter at any rate ended then and there—it had an aspect of finality. I have elaborated this point in a separate chapter.



OUTER QUADRANGLE AND CHANDIMANDAP.

CHAPTER II

ABSENTEE LANDLORDS—THE DESERTED VILLAGE— WATER FAMINE—VILLAGES BREEDING GROUNDS OF CHOLERA AND MALARIA

In those days most of the Zemindars were residents in the midst of their tenantry and even if they were sometimes oppressive there was the compensating virtue—they spent most of what they exacted and screwed out in the midst of their own ryots and thus a considerable portion flowed back into the pockets of the latter. Kalidas in his “Raghuvansam” thus pithily puts it :

प्रजानामेवमृत्युर्थं स ताभ्यो बलिमग्रहीत् ।

सहस्रगुणमुत्सृष्टुमादत्ते हि रसं रविः ॥

“It was only for the good of the people that he collected taxes from them, just as the sun draws moisture from the earth only to give it back a thousand-fold.”

From the middle of the sixties onwards the exodus of the Zemindars to Calcutta slowly commenced and at present most of that well-to-do fraternity are permanent residents of the town. Even in the early thirties of the last century some of the biggest Zemindaries in Rungpur, Dinajpur, Rajshahi, Faridpur, Barisal and Noakhali had passed into the hands of Calcutta magnates. No wonder that James Mill, the historian, in his evidence before the Select Committee of the House of Commons of 1831-32 should observe in reply to the query :

“Are the greater portions of the Zemindars resident upon their Zemindaries?—I believe a very considerable portion of them are non-resident; they are rich natives who live about Calcutta !

Therefore the experiment of creating a landed gentry in India by means of the Zemindary settlement may be considered to have entirely failed?—I so consider it”. As Sinha observes :

“Though apparently milder than the old method of realising revenue through imprisonment, the sale laws gave the last blow to the old

aristocracy of Bengal. In the course of the twenty-two years following the Permanent Settlement, one-third or rather one-half of the landed property in Bengal was transferred by public sale, mostly to absentee landlords in Calcutta.”¹

The immense harm which this vicious custom has inflicted upon the country can scarcely be over-estimated. In the pre-British days it was the custom, religiously observed, to excavate tanks or to construct bunds and also to build roads. I will have occasion to refer to the miserable condition of the once flourishing reservoirs of water both for drinking and irrigation purposes in Bankura. I shall now give here a brief account of similar beneficent arrangements in lower Bengal. Rani Bhowani, of pious memory, excavated numerous tanks throughout her big estates. In the 16th and 17th centuries those Hindu feudal chiefs of Bengal, who for a time asserted their supremacy and semi-independence even against the great Mogul, excavated tanks of immense dimensions, practically lakes, which even to-day extort our admiration. The early colonizers of the lower delta of Bengal—the Mahommedan Pirs and Gazis—were by no means behindhand in this respect and this is perhaps the main reason why their pious acts are graven on the tablets of the hearts of the Hindus. They not only pay homage to their sacred memories by offers of cakes, etc., but also by holding annual fairs. Speaking of the tank of Raja Sitaram, Westland says :

“Though now 170 years old, it is still the noblest reservoir of water in the district. Its area I would estimate by sight at 450 to 500 yards from north to south, and 150 to 200 yards from east to west ; and it contains rarely less than 18 to 20 feet of water. It is the greatest single work that Sitaram has left

¹ “At first the Zemindaries were sold not in the districts to which they belonged, but in Calcutta at the office of the Board of Revenue. This gave rise to extensive frauds and intensified the rigours of the measure.”

“The sale notification of revenue-paying estates took up the bulk of the issues of the *Calcutta Gazette* of the time and in addition Extraordinary issues had to be printed.”—Sinha : *Econ. Ann.*, footnote, p. 272.

behind him,—the only one to which he himself attached his own name Ram.” Westland: *Jessore*, p. 29.²

The erection of the residential quarters of the old landed aristocracy, sometimes of a palatial character, gave employment to skilled masons and excited the emulation of architects ; but partly on account of the decay of old aristocratic families, and chiefly of the absenteeism of their descendants this class is all but extinct ; most of the old resident Zemindars again had “Court” musicians but these latter too are fast dying out. The old tanks are nearly all silted up and their beds have become rice fields. Water-famine during six to eight months in the year is now a permanent feature and the muddy pools

² Beveridge in his *Bakerganj* gives an account of similar big tanks. “The digging cost nine lacs of rupees. * * * *

* * * * *

The tank is no longer full of water, but Kamala’s good deed has not been unfruitful, for its bed now yields a rich harvest of rice, and its lofty walls or sides support forty or fifty homesteads, luxuriant in tamarind-trees, gab-fruit trees, and bamboos. It is pleasant to see these homesteads raised high above the surrounding swamps, and to think that their inhabitants owe their comforts to a forgotten Bengali princess. We are reminded of the noble language used by Burke when speaking of the tanks in the Carnatic : “These are the monuments of real kings, who were the fathers of their people ; testators to a posterity which they embraced as their own. These are the grand sepulchres built by ambition, but by the ambition of an insatiable benevolence which, not contented with reigning in the dispensation of happiness during the contracted tenure of human life, had strained, with all the reachings and graspings of a vivacious mind, to extend the domain of their bounty beyond the limits of nature, and to perpetuate themselves through generations of generations, the guardians, the protectors, the nourishers of mankind.”—*Ibid.*, pp. 75-76.

* “ . . . for Dakhin Shahbazpur and Hattia have many large tanks, which must have been constructed at much expense and labour. They are surrounded by high walls of earth in order to keep out the salt water.—*Ibid.*, p. 22.

“ . . . the work for which Kamala is famous is the excavation of a large tank at a place not far from Kachua, and near the mouth of the Kalai river. The tank is now in ruins, but enough remains to show that it was larger than any tank, not excepting Durga Sagur, which has since been dug in the district”.—*Ibid.*, p. 74.

supplying the drinking water are often no better than polluted sewage. Virulent epidemics of cholera pay their annual visits and levy heavy customary tolls. The village overgrown with jungles and choked with weeds breeds malarial fevers. Those, who can afford, go away with their families and live in towns. The college-educated class, the only people with liberal education, have to earn their livelihood by seeking clerical jobs elsewhere and have become so many run-aways. Only the idlers and the parasites of the *Bhadralog* class and the peasantry are the dwellers in the village. The absentee landlords living in the Chowringhee quarter of Calcutta have imbibed up-to-date habits of modern "civilized" life.³

In their furnished drawing rooms you seldom come across any furniture or articles of *Swadeshi* (home-made) manufacture. Their garage shelters a Rolls Royce or a Dodge ; by a curious irony or coincidence as I am writing these lines, my eyes are turned towards a "nationalist" paper which devotes a full page to a motor car advertisement with the heading "the embodiment of elegance and luxury" which offers a tempting bait to our sybarites of the land-owning and barrister classes.

³ Oudh was annexed so late as 1854 and the curse of absenteeism has already pervaded the land.

Cf. "What of the plea that the Talukdar is the elder brother of his tenants? I am bound to say that some of the older tenants we saw remembered a golden age when they were under protection of a good Talukdar, a man who lived on his estate, kept his eyes and ears open, and allowed no one except himself to fleece his tenantry. But for the last thirty years the Talukdars have been building fine houses in Lucknow and living there, leaving their estates to be managed by underlings or rent farmers.—Gwynn : *Indian Politics*, pp. 262-3.

The great novelist Sarat Chandra Chatterjee in his *Palli Samaj* (Village Life) has in his inimitable style delineated the picture of a typical modern Bengali village.

Another Bengali novel just out (*বিদ্রোহী*) depicts in vivid colours to what depth of degradation the resident *Bhadralogs* of villages have sunk, how they resist tooth and nail any attempt at the amelioration of the condition of the so-called lower classes, or even re-excavation of tanks, how the "reformer" with new ideas is hounded out of the village.

The English merchant-princes or Marwaries, it is true, indulge in these luxuries, but then they are business men ; as brokers or managing agents of, say, half-a-dozen jute mills, they have to run from Budge-Budge to Kankinara and, therefore, they might find it necessary to detail one or two motor-cars for their daily round.⁴ They earn a hundred, nay a thousand, times more than they spend and in many cases they are the producers of real wealth whereas our anglicised Zemindars and the "Lions of the Bar" are mere parasites—they do not add a single farthing to the country's wealth, but have become the chosen instruments for the draining away of the country's wealth—the life-blood of the peasants—to foreign lands.

Lalit Madhab Sen-Gupta, M.A., writing in the *Advance*, July 6, 1930 on "Deserted Village" observes :—

"Whoever happens to go to a village in Bengal and stays there for a couple of months will be simply amazed at the ways the people in a village spend their days. In fact, the special feature of the village life is its idleness. A villager may be seen sitting with his friends and idly gossiping for the better part of the day. Even in the harvest time

⁴ Cf. At the time of his death Lord Cable was the head of a concern (Bird & Co.) controlling 11 jute mill companies with 13 mills.

Cf. also "Not one man in every ten who runs a motor-car to-day can properly afford it if he looks to the future". Judge Crawford, who has long been noted for his outspoken criticisms of modern extravagance, especially as shown in the possession of a motor-car, made further scathing remarks at Edmonton County, when he laid down the dictum quoted above.

At Barnet, 12 months ago, he declared that "even a County Court Judge has no right to buy a car unless he has private means, because his salary alone (£1,500 a year) is not sufficient.

"There is a gross extravagance all round now-a-days", he added, "and the great bulk of the people who come into court are living beyond their means. As has been said, people marry on credit and live on judgment summons."

He thought it "scandalous that a working girl should wear gloves at 4s. 11¼d. a pair", and when told that her shoes cost over £1, her hat 13s. 11d., and her coat 5 guineas, he said he felt, "shocked to think that the clothes of a working girl should cost so much".

If observations like these apply to a rich country like England, it can be presumed that in a poor country like ours not one in a thousand who owns a car, can afford such luxury.

he is not found to be as energetic as he ought to be. He follows mechanically the mode of cultivation of his grandfathers, and, as soon as the crop is cut he again idles away his time. He never cares to consider whether this process of cultivation, which he has been mechanically doing, can be improved upon.

IDLENESS AND POVERTY.

The special characteristic of the village is, therefore, idleness. Now idleness naturally brings poverty, quarrelling brings litigation and all other things with it. A man cannot always remain sitting idle. He must be engaged in doing something. An idle brain is the Devil's workshop. They [the villagers] quarrel with one another, set one person against another and try to do harm to persons who are seriously and sincerely trying to do good to them. Thus they waste their time and energy, their money which, if better utilised, could have removed some of the great social and economic evils which are eating into the vitals of village life."

CHAPTER III

EDUCATION IN VILLAGE—REMOVAL TO CALCUTTA— DESCRIPTION OF CALCUTTA PAST AND PRESENT

To resume the thread of my narrative. My two elder brothers and I received our early education at our father's village school and when my elder brother passed the minor scholarship examination, a different situation was created, which changed the entire course of my father's future career, of which more hereafter. I was educated in that school till I was nine years of age.

In August 1870, I came to Calcutta for the first time. I have a vivid recollection of the impressions produced on my mind. My father took lodgings opposite Jhamapukur Lane and the late Raja Digambar Mitra's house and very near the Brahmo Samaj just then built by Keshab Chandra Sen when he seceded from the Church of Devendranath Tagore (The Adi Brahmo Samaj). Digambar Mitra kept an open table at which his friends were always welcome and my father was almost a constant guest for several years. He used to re-capitulate to us the table-talk of the host as also of Rajendralal Mitra, Hemchandra Kar, Muralidhar Sen and other shining lights of those days.

I spent the month of August in Calcutta, to my great joy, almost every day seeing new sights. I caught glimpses of a new world. A panorama of gorgeous vistas was opened to me. The new water-works had just been completed and the town enjoyed the blessings of a liberal supply of filtered drinking water ; the orthodox Hindu still hesitated to make use of it as being impure ; but the superior quality of the water carried its own recommendation ; by slow degrees, reason and convenience triumphed over prejudice, and its use became almost

universal. The construction of underground drains had just been taken in hand.

If any one were to present to the new generation the picture of the Calcutta of the early seventies, it would scarcely be recognisable. The long row of streets in northern Indian quarter had open drains on both sides in which sewage of abominable stench used to flow. The privies attached to the houses were veritable cess-pools of decomposing night-soil. The arrangement for its removal, which was left to householders, was of a most primitive character. The citizens had to submit patiently to a plague of flies and mosquitoes.

The Suez Canal had just been opened ; but there were only a few ocean-going steamers to be seen on the Hugli, the river was then dotted with sailing ships with a forest of masts. The High Court and the new Indian Museum buildings were approaching completion. There was then no Zoological Gardens but the menagerie of Raja Rajendra Mullick of the Marble House was a miniature Zoo and attracted large crowds of visitors. There were then only a few jute-mills on the Hugli—less than half-a-dozen.¹

The economic conquest of Bengal by the Marwaris had then scarcely begun to be perceptible. It should be noticed that it was not by means of a single pitched battle that this conquest was effected ; on the contrary, it has been achieved by means of a slow, subtle and peaceful penetration.

A century ago Motilal Seal, Ramdulal Dey, Akroor Dutt and others had become millionaires as export and import merchants ; later on Sibkrishna Daw and Prankrishna Law, ancestor of Raja Hrishikesa, did extensive business as importers of hardware and piecegoods respectively. Ram Gopal Ghosh, one of the most brilliant products of the old Hindu College, a pupil of Derozio, who, as an orator and political agitator, was named the *Indian Demosthenes* by a London paper, did

¹ From 1860-70 "we have now got to five mills with about 950 looms at work".—Wallace : *The Romance of Jute*, 2nd ed., p. 26.

not care to seek employment under Government as was the mania of almost all his fellow-students. He commenced his career in the mercantile line and with an English partner opened the firm of Kelsall & Ghosh.² His friend and class-mate Pearychand Mitra preferred commerce to Government service and traded with America. Moreover from the early days of the British connection, Bengalis were *banians* of European houses, and in that capacity they amassed large fortunes. When I first came to Calcutta traditions of Gorachand Dutt, Ishan Bose and others were fresh in the memory of persons then living. But these early Bengali merchant-princes and *banians* took care to sow the seed of ruin and dissolution of their own descendants or families. The Permanent Settlement has always offered rich temptation to invest money in Zemindaries, which often go a-begging for sale—thanks to the rigidity of the “Sunset Law” and the indolent and extravagant habits of their possessors. The founder of a Zemindary was usually a self-made man of active habits and not generally given to dissipation. But his successors born with silver spoons in their mouths found everything ready at hand and were often surrounded by a swarm of parasites and sycophants. Small wonder that they should go wrong ; they neglected to cultivate their minds and gave themselves up to a life of ease and self-indulgence. The idle brain is the Devil’s workshop. When Doctor Johnson was asked what the effect of primogeniture was, he coolly replied “It had the merit of perpetuating but one fool in the family”. But the law of inheritance among the Hindus and still more among the Moslems being

² “While continuing his studies, in his spare time he [Ghosh] specially directed his attention to the study of the markets and the natural produce of the country. Before he was 20 he wrote a series of articles on the Inland Transit Duties. After gaining experience, first as banian and later as partner in a European firm, he started business on his own account, under the style of R. G. Ghose and Co., established a branch firm at Akyab and another at Rangoon, and became a rich and successful merchant.”—Buckland: *Bengal Under the Lieutenant-Governors*, vol. ii, p. 1024.

more equitable leads to the endless partition of ancestral property, and hence any number of fools, idiots and extravagant debauchees are produced.

It was but natural that the descendants of those who were *banians* of European Firms, or who carried on commercial enterprises should be gradually elbowed out from their position of vantage by the hardy, adventurous, patient, toilsome sons of Marwar, Bikanir and Jodhpur. In the early seventies a considerable portion of Burrabazar was already in their grip, but there were still a good few, opulent Bengali families, whose ancestors had dealings with the East India Company.

But the opening of the Suez Canal brought about a revolution in the trade with the East and its effect can be best realised by comparing the table of exports and imports of Calcutta in 1870 with that in 1927-28.³ London, Liverpool, and Glasgow were brought within easy reach, so to speak, of Bombay and Calcutta and the rapid extension of the railways and connecting inland steamer services side by side co-operated in this direction. Burrabazar including Clive Street is now a bee-hive, swarming with Marwari and Bhatia businessmen and the Bengalis have been, or rather willingly and wantonly allowed themselves to be, completely ousted from the mercantile world. The southern adjunct of Burrabazar which represents the city proper, in that it locates the Royal Exchange, the

³ Value of the total imports of merchandise, exclusive of Govt. Stores into the port of Calcutta :

	Rupees		Rupees
1870-71	16,93,98,180	1927-28	83,59,24,734

Value of the total exports of merchandise exclusive of Govt. Stores from the port of Calcutta :

	Rupees		Rupees
	1870-71		1927-28.
Indian merchandise	22,57,82,935	Indian merchandise	137,67,38,779
Foreign merchandise	19,38,553	Foreign merchandise	70,95,822

Total 22,77,21,488

Total 138,38,34,601

It will thus be seen that the value of imports and exports has increased almost six-fold.

Banks, and the Share Market, is no doubt dominated by the European element, but the Marwaris and Bhatias are active participants in the daily transactions of crores of rupees going on there. The very proprietorship of the land of this quarter as also of Burrabazar with the unearned increment of its value has practically passed out of the hands of the Bengali. Want has driven him to sell his patrimony. A golden opportunity which occurs but rarely in a nation's life was allowed to be snatched away. Bengal has irretrievably lost her chance. Her sons of the old aristocratic families and middle *Bhadralog* classes have become homeless wanderers in the land of their birth, starving or at best eking out a miserable existence as ill-paid quill-drivers.

Now to continue my story. My eldest brother having passed the minor scholarship examination had to come to Calcutta to finish his education. My next elder brother and myself were approaching the M. E. standard. My father had now to face a serious situation. He was very much in advance of the average rural gentry in intellectual attainments and culture and had himself tasted and drunk of the Pierian Spring. He was therefore naturally anxious that his sons should have the benefit of the best education then available. In those days the journey by boat from our village to Calcutta took three to four days, but now the distance has been abridged owing to the combined railway and steamer communication and the journey occupies only 14 hours. There were then no palatial hostels or "attached" messes under University supervision. My father had only two alternatives to choose between. One was to keep a separate establishment in Calcutta under the supervision of a guardian-tutor ; the other was that my parents should remove to Calcutta so that we might not be deprived of their personal care and healthy influence. But there were almost insuperable difficulties in the way of the latter plan. My father was by no means a big Zemindar and could not afford to leave the management of his estates to the care and direction of a well-paid and fairly honest agent. His estates

consisted of a cluster of small *taluks* and he had, moreover, embarked on the career of a miniature banker and money-lender in which capacity he had advanced money to several people on mortgage of their landed properties. It was, therefore, incumbent on him that he should be on the spot in order to conduct his own affairs and not be away in distant localities for any length of time. The question what course should be adopted now began to be debated in the family. I well remember that frequent consultations used to be held between my father and mother and it was by no means easy to decide between the conflicting claims. At last it was settled that they should themselves live in Calcutta with their children, since boys of tender age like ourselves could not be expected or relied upon to make arrangements for messing and boarding in a strange and distant town away from the tender care of parents.

My father, however, made no secret of one drawback incidental to his rural life at which he always chafed. He often used to complain bitterly of the society of the village gentry into which he was thrown. They lived in a world entirely different from his. One whose mind had been formed and character moulded on Hafiz and Sadi and some of the master-pieces of English literature—one who had sat at the feet of Ramtanu Lahiri and had already come into contact with the enlightened of the metropolis, could not be expected to enjoy the company of men who were half-a-century behind him in culture and who were steeped to the marrow in orthodoxy and superstition and old-world ideas. One or two incidents may be cited here to illustrate what I am labouring to bring out.

The widow-remarriage movement started by Vidyasagar had caught the imagination of young Bengal and my father was anxious to give a practical proof of his zeal for the cause. One Mohanlal Vidyabagis who was a Pandit in our school and who, though brought up in a *tol*, had thrown away the sacred thread of the Brahmin, was easily persuaded to marry a widow of our village. The news, however, of this projected sacrilege

spread like wildfire and was not long in reaching my grandfather at Jessore. He was an orthodox Hindu and was simply shocked at the enormity of the crime about to be perpetrated. He ran to Raruli post-haste with relays of palanquin bearers and peremptorily forbade the approaching nuptials. My father had to submit to the dictation and the programme fell through. On the occasion of the *Sradh* ceremony of my grandfather many people in the villages round about refused to join it on the score of my father having become a *mlechchha*. It was also given out that a neighbour's calf which was missing had been slaughtered and the veal made into cutlet and other viands and served at the table. Umanath Roy, Zemindar of Satkhira, composed a doggerel which was popular at the time, the first distich of which may be thus interpreted :

Oh my God ! what are things coming to,
Raruli like Taki⁴ will hasten this land to perdition !

⁴ Kalinath Munshi of Taki (dist. 24 Perganas) was a liberal supporter of Ram Mohon Ray in his reform movement and had thus scandalised his orthodox co-villagers.

CHAPTER IV

EDUCATION AT CALCUTTA

In December 1870 my parents permanently removed to Calcutta and rented the house No. 132, Amherst Street and we resided here for about ten years.¹ All the early associations of my boyhood are entwined round this dwelling and this quarter of the town known as Champatala. My father got me and my elder brother admitted into the Hare School, then located in the one-storey building facing Bhowanicharan Dutt's Lane and this is now an adjunct of the Chemical Department of the Presidency College.

When my class-mates came to know that I hailed from the district of Jessore, I at once became their laughing-stock and the butt of ridicule. I was nick-named *Bângál* and various faults of omission and commission ascribed to the unfortunate people of East Bengal began to be laid at my door. A Scotch rustic or a Yorkshire lad with his peculiar brogue and queer manners, when he suddenly found himself in the midst of cockney youngsters, a century ago, was I suppose somewhat in a similar predicament. At that time even the very germs of what is known as the national awakening did not exist, and very few people cared to know that my native district had begotten and sheltered in its bosom two great warriors, who had raised the standard of revolt against the Great Mogul, or his Viceroy, otherwise I could have silenced the idle prattlers at that tender age by reminding them that the scenes of the martial exploits of Raja Protapaditya were almost within a stone's throw of my village ; and that Raja Sitaram Ray's capital Mahmudpur was also located in my own native district ; nor could I drive them into a corner by reminding them that the greatest of the then living poets of the province, the father of blank-verse in our literature, the 'Milton of Bengal' was a grandson of our village ; and that the

¹ This house still bears the above number.

greatest of the then living dramatists, Dinabandhu Mitra, was also born and nurtured in the bosom of the same district.

Here I must pause a while to give an idea of my intellectual equipment previous to my coming to Calcutta. The relations between my father and ourselves (i.e. myself and my brothers) were most frank and cordial. We picked up more information on every conceivable subject by direct conversation with him than through mere book learning. We were allowed the utmost latitude in approaching him and cross-questioning him. I have often found that there is sometimes an impenetrable wall interposed between father and son ; the father is held in terror—a sort of frigid reserve is maintained between the two. The mother or the family friend has to intercede on behalf of the son as a go-between whenever the latter has to approach the former. My father fortunately outdid the sage Chanakya, whose advice is that up till the completion of the 5th year the son should be nursed ; up till the 10th year he should be scolded (for misbehaviour) ; but as soon as he reaches the 16th year he should be treated as a friend. Before my coming to Calcutta—when I was reading in our village school and was barely nine years of age—I had shown a predilection for history and geography. One day I felt curious to test the geographical knowledge of my father and asked him where Sevastapool was. The answer at once silenced me. “What” ! he exclaimed, “You speak of Sevastapool ! I almost see with my own eyes the siege of the city by the English.”

On another occasion in drawing attention to the sense of duty and patriotism of an Englishman, he referred to a remarkable incident which our young men would do well to lay to heart. The mutiny had broken out and Sir Colin Campbell (afterwards Lord Clyde) then on furlough was reading newspapers at the Edinburgh Philosophical Institute. He was interrogated by wire from the India Office if he was prepared to go out to India. He at once answered, “Yes”. Within a few minutes he was again asked when he would be ready to start. The answer was, “Immediately”.

It was again from my father's lips I first learned when almost a child that beef-eating was quite in vogue in ancient India and that the very word for "guest" in Sanskrit is "Goghna" (one in whose honour the fat cow is killed²). I also remember having heard from him the names of two books, namely Young's *Night Thoughts* and Bacon's *Novum Organum*, which I confess sounded to me as unmeaning jargon. By a strange coincidence, *Night Thoughts* was one of the prize books awarded to me at the Albert School several years afterwards. Being of an inquisitive turn of mind and studious in habits I used to ransack the shelves of my father's library. Johnson's Dictionary in two quarto volumes, edited by Todd and published in 1816, if my memory serves me right, caught my fancy and the many apt quotations from classical authors were my delight. I used to turn over its pages and commit to memory passages though I could not make out what the abbreviations "Shak", "Beau and Fl" stood for; one day I repeated from memory :

"Ignorance is the curse of God,

Knowledge the wing wherewith we fly to Heaven."—*Shak*.

to the agreeable surprise of my eldest brother.

My acquaintance with Shakespeare ripened into close friendship and my appetite for the dramas, especially the tragedies, of the immortal bard grew by what it fed upon even during my boyhood. I vividly recollect some incidents of my school days. At the annual examination for promotion from the lower form to the higher, the Professors of the Presidency College used to be our examiners. Peary Charan Sarkar was our examiner in Geography and Moheschandra Bannerjee in History. These being my favourite subjects I always scored over my class-mates. For two years in succession I got from Bannerjee full marks in the oral examination. Scarcely were the questions put when I answered each of them to his full satisfaction. On

² Several articles by Rajendra Lal Mitra have been published in a collected form entitled : *Beef-Eating in Ancient India* (Chuckerberty, Chatterji & Co.).

one occasion he asked me where I came from. I replied that I hailed from Jessore ; the answer evidently satisfied him.

The site now occupied by the Presidency College buildings was then an open maidan (meadow) and it was our playground. In 1872 the accommodation being insufficient for the growing needs, the Hare School was removed to the commodious buildings now occupied by it. The tablet on the wall of one of the class rooms bearing the significant lines in memory of David Hare, composed by D. L. Richardson, deeply moved me and I can even now repeat them word for word.

“Ah! warm philanthropist, faithful friend,
Thy life devoted to one generous end :
To bless the Hindu mind with British lore
And truth's and nature's faded lights restore”!

Girischandra Deb was then the Headmaster of Hare School and Bholanath Pal of the rival Hindu School. These two Institutions, both under Government management, were then regarded as the premier ones in Bengal and there was a keen healthy competition going on between them as to which would secure the highest place in the Calcutta University Entrance (Matriculation) Examination. There were then very few private schools in Calcutta, or for the matter of that in Bengal. James Sutcliffe, as Principal of Presidency College, was the Head of both and he used regularly to visit our school every Saturday. I was always of studious habits but by no means a book-worm. The prescribed text-books never satisfied my craving. I was a voracious devourer of books and, when I was barely 12 years old, I sometimes used to get up at 3 or 4 o'clock in the morning so that I might pore over the contents of a favourite author without disturbance. Afterwards I gave up this habit, as it is prejudicial to health and in the long run does not pay. History and Biography have even now a fascination for me. I read Chambers' *Biography* right through several times. The lives of Newton, Galileo—although at that time I did not understand or realise the value of their contributions—interested me much. Sir Wm. Jones, John Leyden and their linguistic attainments

deeply impressed me as also the life of Franklin. The answer of Jones' mother to his interrogations "Read and you will know" also was not lost upon me. Benjamin Franklin has been my special favourite ever since my boyhood and in 1905 while on my second visit to England I procured a copy of his *Autobiography* which I have read and re-read any number of times. The career of this great Pennsylvanian—how he began his life as an ill-paid compositor and by sheer perseverance and indomitable energy rose to be a leading man in his country—has ever been an object-lesson to me.

Strange as it may appear, from my boyhood I was unconsciously drawn towards the Brahmo Samaj. Various were the circumstances contributing to it. My father, though outwardly conforming to the current Hindu faith, was at heart liberal to the core. The *Tatwa Bodhini Patrika*, the organ of Adi Brahmo Samaj, adorned the shelves of my father's library. The writings and sermons of Debendranath Tagore, Keshab Chandra Sen, Rajnarain Basu, Ayodhyanath Pakrasi, and Akshay Kumar Datta and others imperceptibly prepared the groundwork of my faith. I was not under the influence of any particular dominating personality in the shaping of my religious bias. Revealed religion I have had an innate disbelief in. Selected extracts from the writings of Francis William Newman in the *Tatwabodhini*, as also the correspondence between Frances Power Cobbe and Rajnarain Bose, published in the same journal, appealed to me much ; especially the results of the German school of Biblical criticism as represented by Strauss, whose *Life of Christ the Man*, divested of the accretions of miracles and supernaturalism, which had grown round him, were much welcomed by the early leaders of the Brahmo Somaj. Renan's *Life of Jesus* also must be placed in the same category. In my maturer years Martineau's *Endeavours after the Christian Life* and *Hours of Thought*, Theodore Parker's and Channing's writings have been my favourite companions. Bishop Colenso's *The Pentateuch critically examined* I have not had an opportunity of reading

but I was fully aware of its purport by references in other works. Later on the discrepancy between the Mosaic Chronology and the geological age of this habitable globe of ours further shook my faith in the so-called revelations. Moreover, the caste-system, as it is in vogue in the existing Hindu Society, with its pernicious appendage of untouchability, appeared to me the very negation of the relation existing between man and man. Enforced widowhood, child-marriage and other customs were equally my abomination. My father often used to say that at least one of his sons should marry a widow and he often singled me out for this purpose. It was the social aspect of the Brahmo Samaj that specially appealed to me.

Keshab Chandra Sen, on his return from England in 1871, had started the *Sulava Samachar* (lit. cheap news), a pice weekly, which was brimful of novel ideas, and I was also a regular attendant at his Sunday evening sermons, at his new Church, the Bharatbarsiya Brahmo Samaj, which he founded after the schism with the Adi Brahmo Samaj. The sonorous voice of the silver-tongued preacher is still ringing in my ears. I would never let slip an opportunity of hearing his addresses at the Town Hall and at the open-air meetings or on Saturday afternoons at the Albert Hall.

The year 1874 was an eventful one in my life. I was reading in the 4th class when in August I got a bad attack of dysentery, which proved to be obstinate and my attendance at school had thus to be discontinued. Hitherto I had enjoyed splendid health, sound digestion and a good appetite. From my parents, I had inherited a robust constitution and I was altogether of strong build. But my disease proved to be chronic and although its acute stage disappeared after seven months, I became a permanent valetudinarian and my digestive organs were impaired. I grew weaker day by day and my natural growth during the period of adolescence was thus arrested. I had to submit myself to a strict dietary regimen and discipline.

In one respect however this malady turned out to be a blessing in disguise. I have always noticed that progress made in a class room is of a slow nature—some boys are dull, others mediocre and a very few of superior intellectual endowments. All these are harnessed together as in a team and the actual progress made represents the resultant of these factors. An hour technically represents a period of 45 minutes, the roll-calling function usurps 5 minutes or more. An English residential school like Eton, Rugby or Harrow has no doubt advantages which more than make up for the drawback just pointed out. There the boy learns many things which are invaluable, in that they contribute to the making of character. There he learns lessons which cannot be had from book-lore. There is much force in the well-known dictum of Wellington that the battle of Waterloo was fought on the fields of Eton. Headmasterships of such public schools are often the stepping-stones to bishoprics or masterships of colleges at Oxford and Cambridge. Such schools can boast of an Arnold or at any rate of a Butler.³ But an average school such as a Bengali boy is blessed with, has no such recommendation; here he has to con his dull lessons in a language which is not his mother-tongue and it is itself a serious handicap to his progress.

A boy's progress in a school is apt to be slow even if he is far and away the best boy in the class. He is unconsciously liable to be filled with pride and sometimes he grows to be a conceited prig. But after all how much does he learn? Precious little indeed! He often thinks all that he has to master is confined within the narrow limits of prescribed textbooks. His world of information is of a circumscribed nature. Moreover, a bright lad has the trick of knowing as much as will do for him. It is by no means the case that a boy who is known as the dux of his class is really the most promising boy,

³ As delegates of the Calcutta University at the first Congress of the Universities of the Empire, myself and my friend Devaprasad Sarvadhikary were the guests of Dr. Butler, Master of Trinity College, Cambridge.

although an ordinary teacher with his narrow vision may pronounce him to be such.

Lord Byron and our Rabindranath were hopelessly deficient in Mathematics precluding their success at the University. Sir Walter Scott's teacher no doubt foretold his future greatness when he gave out his deliberate opinion: "Dunce he was—dunce he would remain." Edison's teacher sent Edison home with a note saying that he was a hopeless blockhead. To go higher up the educational ladder: the lives of some 150 senior wranglers have been studied and it has been found that most of them were never heard of in their subsequent careers as they simply vegetated as teachers in secondary schools.

Being, however, thus set free from the tyranny of the dull and dreary routine method followed in the schools, I could now indulge in my passion for studies without let or hindrance. My eldest brother, who was now at the Presidency College, added largely to the stock of books already in my father's library. Lethbridge's *Selections from modern English Literature*, which was then used as a text-book for the Matriculation Standard, was my delight and I read it right through several times. The *Selections* did not satisfy my craving, but they served as a stepping stone to my further acquaintance with the classics of English literature. Goldsmith's *Vicar of Wakefield* I read and re-read and the characters portrayed in it were soon familiar figures to me. Squire Thornhill, Mr. Burchell, Olivia, Sophia, Moses and the inimitable ballad—the *Hermit* and the pathetic, contrite lamentation of Olivia beginning with—"when lovely woman stoops to folly" are as fresh in my recollection today as they were more than half a century ago. This is all the more remarkable, seeing that I had had no experience of the family life of an English parson. Years after while in England George Eliot's *Scenes from Clerical Life* equally fascinated me. After all, one touch of nature makes the whole world kin and human nature is much the same irrespective of clime, creed and colour. I also read several essays from the *Spectator* as also Johnson's *Rasselas*,—the first para of the latter beginning with

“Ye, who listen with credulity”—I can even now repeat word for word from memory. Coming into close and intimate contact with the masterpieces, I soon contracted a taste for the rich and copious English literature. Knight’s *Half-Hours with the best Authors* also helped me much in this direction. *Julius Cæsar*, *Merchant of Venice*, and selected portions from *Hamlet*, e.g. the *Soliloquy* opened up a new world to me and I was fired with the ambition of reading as many productions of the great poet as I possibly could in my later life.

It was about this time that the *Bangadarsan*, the periodical, which was destined to usher in a new era in Bengali literature, began to appear as a monthly. Bankim Chandra’s *Visabriksha* (poison tree) was then coming out in it serially. Although at this tender age I could not comprehend the intricacies of human foibles delineated with exquisite skill, I followed this masterpiece with intense and breathless interest simply for the sake of the story. The writings of Prafulla Chandra Bannerji on *Valmiki and his age* and of Ramdas Sen on the *Age of Kalidas* etc., helped to give me an antiquarian bent. It should, however, be mentioned here that the articles in the *Vividharta Samgraha* by Rajendralal Mitra on the “Sen Rajas of Bengal” and the like were precursors in this line. Little did I then dream that the taste for antiquarian studies thus acquired, though lying dormant for more than a quarter of a century, would stand me in good stead in writing the *History of Hindu Chemistry*. The *Aryadarsan* under the editorship of Jogendranath Vidyabhusan also followed in the wake of *Bangadarsan* and the translation of the autobiography of John Stuart Mill which was a prominent feature of this monthly periodical made a very deep impression on me. One thing specially struck me. James Mill had taken the precaution of not sending his gifted son to any public school and himself acted as his friend, guide and philosopher. The precocious intellectual attainments of John Stuart Mill are thus easily accounted for. When barely ten years old he had learnt Latin, Greek, besides Arithmetic and histories of England, Spain and Rome.

I was also a regular reader of the three leading weekly newspapers of those days,—the *Somaprakasa* (Bengali) under the able editorship of Dwarkanath Vidyabhusan, maternal uncle of the late Pandit Sivanath Sastri ; the *Amritabazar Patrika* (then a bilingual), whose trenchant criticism and ruthless exposure of official vagaries I relished much ; and last but not least the *Hindu Patriot* edited by the famous Krishnadas Pal. The *Indian Mirror* under the joint editorship of Narendranath Sen and Krishna Behary Sen was then the only English daily on this side of India under purely Indian control, and so great was my eagerness to read it that I used to go to the Albert Hall an hour before the classes began.

Here I must relate an incident which not only gave a colour to but was destined to be a turning point in my future career. One day looking over the shelves of our library, I chanced upon a copy of Smith's *Principia Latina* ; evidently it had been picked up by my eldest brother, who was a book-hunter at a second hand book-shop but was lying unused. On turning over the first few pages, I was filled with an agreeable surprise. At the bottom of the declension of each substantive commencing with e.g. *mensa, mensæ, dominus, domini* and so forth, was given a list of nouns of masculine or feminine gender as the case may be coming under the same category and one or two verbs of unknown (to beginners) conjunction, but with the meaning attached, thus *habet* (he, she, it) has, *occidit* (he killed). The formation of the sentences and their meanings now became clear ; e.g. *aquila alas habet* (the eagle has wings), *dominus hastâ servum occidit* (the lord killed the slave with the spear). Since I had already gone through *Vyakarana Upakramanika* (the first step to Sanskrit grammar) of Iswarchandra Vidyasagar I could not but be struck with the wonderful similarity between the two dead languages. The sentence : *Recuperatâ pace, artes efflorescunt* (peace being restored, the arts flourish) given as an illustration of the ablative absolute, which has its exact counterpart in Sanskrit, simply filled me with wonder. At that early age I could not, of course, be expected to know

all about the remarkable affinity between the two languages derived from the same parent stock as explained in, say, "Grimm's Law," or Bopp's *Comparative Grammar of the Indo-Aryan Languages*. The die was cast. The determination was made and no sooner made than was carried into execution. Here was a golden opportunity of learning Latin without the help of a teacher. I began to con the lessons in the *Principia* with renewed interest and it did not take me long to finish part first of the *Principia*, which in due course was followed by part second of the series as also the companion grammar.

After suffering from dysentery for some seven months, I got rid of it in its acute form but in its milder aspect it has been my life-long companion ever since 1875. I became a victim of indigestion, diarrhoea and later on of insomnia. I had to submit to the most rigid observance of the rules of diet and regimen and for the sake of sharpening my appetite I have always to follow a regular routine of walking in the mornings and evenings and, while living in the countryside, the turning up of sods of earth with the spade in the garden; also swimming and rowing have been my favourite health-giving recreations.

It will now be understood why I characterised my being a prey to an obstinate malady as a blessing in disguise. I have often noticed our young men of robust health boasting of lion's appetite, devouring big quantities of rich viands. Apparently they seem to get on all right for a time. But nature, kind and benign to all who obey her laws, is equally unsparing in exacting her dues from those who frequently violate them. These people, again, full of conceit, neglect the ordinary laws of health with the result that obesity creeps on with the concomitant complaints,—diabetes, rheumatic pains, or gouty joints. Recently I had occasion to go the round of several Zemindar families in Calcutta; although it was ten o'clock in the morning, some of them had not yet left their beds; others again unable to support their heavy corporeal

weight in a sitting posture were lying stretched on the carpet of the floor like so many pythons or boa constrictors. I told them to their face that I would not exchange all their wealth for my simple and active habits. But why blame such people alone? Some of our best men—men of whom the whole of India is proud—have gone to premature graves because of their neglect of the fundamental laws of health. Overwork of the brain, coupled with sedentary habits, cut short the lives of Keshab Chandra Sen, Kristodas Paul, Justice Telang, Vivekananda, Gokhale, and other victims of diabetes. They were carried off between 44 and 46 and even earlier i.e. at a time when an Englishman considers himself almost in the prime vigour of life. This represents a loss to the country which it is impossible to overestimate. Just imagine what the country would have gained if Gokhale had been spared another ten years. The Compulsory Elementary Education Bill which he introduced could not have been given a short shrift by an unsympathetic Government; it would have been by this time on the Statute Book.

Readers of Froude's *Life of Carlyle* will remember that the Scotch philosopher and sage while a student at Edinburgh had to suffer excruciating pain in the stomach and was also a life-long victim of insomnia and yet by strict observance of the laws of health and by taking regular exercises he not only lived to an advanced age but could labour prodigiously in the intellectual field. Herbert Spencer was even a worse sufferer. I might quote several other instances, but I must stop here for fear of being guilty of digression. After having picked up an elementary knowledge of Latin, I found I could easily go through Smith's *French Principia* (parts I & II) without having recourse to anybody's help. French, Italian and Spanish as direct offsprings of Latin, admit of easy mastery by one who is conversant with the parent tongue.

It will thus be noticed that I have special reason to look back to this period of my life with mingled joy and delight. When you learn a new language, you have a new world

revealed to you as it were. But the charms of English Literature had almost a seductive influence on me. K. M. Banerji's *Encyclopædia Bengalensis*, which evidently my father had gone through in his younger days, contained selections from Arnold's *Lectures on Roman History*, Rollin's *Ancient History*, and Gibbon's *Roman Empire*, which deeply impressed me. Several years later the *Meditations* of the Roman Emperor as also Gibbon's masterly portraiture of the illustrious trio, who as if by divine ordination, followed each other in succession—Hadrian, Antoninus Pius and Marcus Aurelius—often soothed my over-wrought brain. Even in my advanced age, after a day's hard toil at the Laboratory, I compose my nerves by stealing to my study so as to indulge in an hour's recreation of reading a few pages of a biography or history preliminary to my evening perambulations on the maidan.

Besides Chamber's *Biography* referred to above Maunder's *Treasury of Biography* was also my delight ; I used to open at random any portion of the latter and go right through it page after page. One day I came across the article on *Ram Mohon Ray* and discovered that it had been borrowed *verbatim* without acknowledgment in the Reader No. IV of the School Book Society's publication, which was the English text-book in the fourth class of the Hare School. It was with feelings of anguish I found that among the thousands of lives in the *Treasury*, only one Bengali name was deemed worthy of a place.

When I had sufficiently recovered from the effects of the attack of dysentery, I thought of going on with the prescribed academic course. With that view I consulted my eldest brother as to the institution in which I should take my admission. My father scarcely troubled himself over such matters and gave me *carte blanche* so to speak in making my choice. He reposed the fullest confidence in me and had ample reason to believe that it was well deserved. Technically I had fallen behind my class-mates at the Hare School as I had stayed away for nearly a couple of years. The session was then also far advanced and for the broken period of the academic year I got myself

entered on the roll of the Albert School in the 3rd class. This institution had lately been founded by Keshab Chandra Sen and his co-workers and naturally it had a great attraction for me. Keshab's younger brother, Krishna Behary, was its Rector (practically Headmaster), but he was away at Jeypur for a short term as Principal of the Maharaja's College. His *locum tenens* was Srinath Dutt, who had lately returned from England after completing a course of studies in London and in the Agricultural College at Cirencester. Here I found myself in congenial atmosphere. The teachers were all members of the Brahmo Samaj ; they had rallied round the banner of Keshab Chandra when he seceded from the Adi Samaj, discarding the caste-system. Our young men of the present day can scarcely form an adequate conception of the social persecution and excommunication which these pioneers of reforms had to undergo. Beloved sons in whom their parents had reposed their fondest hopes had to leave their paternal roof and shift for themselves as best they could. Manfully and cheerfully and without a word of complaint did they submit to their lot. Scarcely had I been a couple of months here, when the presence of the newly-admitted boy began to be whispered about. My teachers discovered to their agreeable surprise that I stood head and shoulders above my class-fellows in every subject taught there and my precocity struck them as remarkable. Whenever there was a question on etymology, I could at once come forward with the radical meaning. For instance, there was the term "nidification" in a passage in a selection from White's *Natural History of Selborne*. From my smattering of Latin I had already noticed the striking affinity between this language and Sanskrit and the many words which can be identified as common to both e.g. :

Nidus = Nidas (Sans.)

Decem = Dasam (Sans.)

I cherished however a secret desire all along to return to Hare School from the beginning of the next academic session ;

it had glorious associations connected with the name of the Founder and had built up traditions round it. The Albert School on the other hand had been recently started on its career and it could not boast of any brilliant alumni, who had shed lustre on it. I did not therefore appear at the annual examination held for the purpose of class-promotion. I was fairly confident that I would win the first prize ; but then it would be unfair to leave the institution which would award it. These were the considerations that swayed my decision. I went home to my native village and enjoyed a much longer vacation and having set myself free from the stress and strain of competitive brain-work, I could indulge to my heart's content my passion for reading as also for agricultural pursuits.

From my childhood I was of a shy disposition and did not much mix with companions of my own age ; but my favourite recreation was reading and arboriculture combined with physical exercise. I have always held that children brought up in towns imbibe all the vices of cockneydom. Nursed in a kind of hot-house and brought up under artificial conditions, they arrogate to themselves the airs of a superior being, heap ridicule on the queer ways, manners and brogue of the country-bred and seldom feel sympathy for village folk. The English poet, who was evidently watching with regret the tendency in his days to despise country-life, pathetically sings,

Let not ambition mock their useful toil
Their homely joys, and destiny obscure ;
Nor Grandeur hear with a disdainful smile
The short and simple annals of the poor.

Now-a-days the shibboleth of life-long dwellers in the town is "back to the village", but this is merely a parrot-cry, which comes with bad grace from people who go into hysterics and are frightened out of their wits if they have to accommodate themselves even for twenty-four hours to the primitive condition of village life. My close contact with the peasantry and masses in general was no doubt the key-note to the alacrity with

which I could throw myself heart and soul into the Famine and Flood Relief Work in 1921 and 1922 respectively.⁴

My migrations to my ancestral home twice every year had a sobering effect on me. These periodical visits to rural spots considerably neutralised the disadvantage of urban upbringing. Even in my old age, I am never happier than when I am in the surroundings of my childhood.

Although I instinctively avoided the society of those who used to frequent my father's drawing-room, I threw off reserve when in the company of the unsophisticated rural folk. I often would visit them in their thatched homes. In those days there were scarcely any grocer's shops in the village. Sago, arrow-root, and sugar-candy which have so largely entered into the dietary of the sick could not be had for love or money and I always took particular pleasure in distributing these and laying my mother's stores under heavy contribution, but she gladly used to second me in my ministrations.

On my return to Calcutta some time about the beginning of January 1876, I asked for a certificate from the authorities of the Albert School stating the standard up to which I had read there so as to enable me to get admission into the corresponding class at the Hare School. But my teachers almost in a body headed by Kali Krishna Bhattacharyya (teacher of Sanskrit who died lately) dissuaded me from this purpose and as Krishna Bihary Sen was about to return from Jeypur to join his own school, I changed my mind. This was another fortunate event in my future career. At the Hare School our relations with the teachers were mechanical. Outside the class-

⁴ The complaints made by the so-called depressed classes, some of whom gladly pay subscription towards the expenses of the District Conferences, namely, "that the Babus (i.e. the educated and cultured classes) only come to us when they are in need of money but they never care to look to our interests or to mix with us on terms of equality" are, unfortunately, well-grounded. In fact, it is the haughty aloofness, born of the feelings of caste superiority and culture which has driven a wedge between the classes and the masses. In this respect the Chinese students are an example to us.

rooms we had nothing to do with them ; to all intents and purposes they were strangers to us.

Our senior tutor of the 4th class (Hare School) was Chandi Charan Bannerji. He used to make faces ; his grinning and grimaces were terrible, which spread a shiver among his pupils. He was massive in bulk ; his mustachios looked bushy and also because of his rotund facial contour he had a feline appearance. He was nicknamed *Baghachandi* (Chandi the Tiger). At the Albert School, on the other hand, our teachers were models of gentleness and suavity. Aditya Kumar Chatterji was a personification of all the noble qualities that contribute to the making of an ideal teacher. I see him before my eye with smiles playing on his lips and a benign influence radiating from his countenance. Equally beloved was Mahendranath Dan. Both of them had joined the Brahmo Samaj braving cheerfully social excommunication. Myself and one or two of my fellow students used often to visit them at their lodgings and we had conversations on all manner of subjects without reserve or restraint. The tenets of the Brahmo Samaj were explained to us—how it differed from other forms of faith in that it was not based upon *revelation*, but had to draw more or less on *rationalism* and *intuition* (for the first time in my life I tried to grasp the meaning of the word *intuition*). I unconsciously felt what personal contact with an ideal teacher meant. Long afterwards when I read Tom Brown's *School Days* I was reminded of my old teacher and did not fail to realise why successive generations of pupils should cherish the memory of Arnold of Rugby.

Looking half a century back I recollect with grateful feelings the obligations I am under to my Albert School teachers and the cordial and happy relations in which I stood with them. When the prize-day came I could not of course claim one as I had absented myself from the examination. But the authorities realising the awkwardness of the situation took counsel and awarded me a special prize of general all round proficiency. Next year at the annual class-examination

I stood first and won a basket-load of prize books. Hazlitt's edition of a complete set of Shakespeare's works, Young's *Night Thoughts*, Thackeray's *English Humorists* were among them.

Krishna Behari Sen, on his return from Jeypur, took up his duties as Rector. He was an erudite scholar, well-versed in the English classics. As a public speaker he was a failure and he suffered in comparison with his illustrious brother Keshab Chandra whose oratorical gifts had profoundly stirred many a British auditorium. Krishna Behary's *forte* lay in his pen, which he wielded with effect. His style was simple and facile. He was joint editor of the *Indian Mirror*, his colleague being his cousin Narendranath Sen. Krishna Behary was also the sole editor of the Sunday issue of the *Mirror* which was devoted almost exclusively to religious matters. It was in fact an organ of the Brahmo Samaj.

The Albert Hall had just been founded by the exertions of Keshab and his co-workers. The school was located on its ground floor and it also occupied some rooms on the first floor round about the Hall and the reading-room. In the latter were to be found, on the table, leading journals and dailies and I was in the habit of going there an hour before the classes commenced so that I might go through as many of them as I could.

The Russo-Turkish War had broken out at this period and the heroic defence of Plevna by the brave Osman Pasha and that of Kars by Ahmed Mukhtar Pasha was being watched with keen interest by the world, specially by the Asians. I used to follow day by day the fortunes of the war. Needless to say that my sympathy was enlisted entirely on the side of the Turks, who were the only Asian people holding sway in Europe. I well remember that I sometimes had controversies bordering on acrimony with my eldest brother about the moral aspect of the War. He had evidently got his cue from Gladstone, who would have nothing to do with the "unspeak-

able" Turk but would have been glad to see him packed off Europe, "bag and baggage."

My love of English literature grew under the teachings of Krishna Behary. He was not a teacher of the average type, who simply contents himself with paraphrasing certain passages and giving some synonyms of words. His mode of teaching was of a different order ; he could invest the subject with new interest and bring in a wealth of information. One day he told us incidentally that Byron had nicknamed Scott *Apollo's venal son*. This set me on the track of Byron. I had already committed to memory his perfervid appeal to the Greeks to shake off the Turkish yoke. I had read also the celebrated chapter in *Ivanhoe* describing the trial by combat. I now took up one after the other Byron's and Scott's poetical works from our library shelves. Although my juvenile attempt may be compared to that of "a pigmy rummaging the armoury of a giant", yet I enjoyed heartily Byron's biting sarcasm directed against the Edinburgh Reviewers in his *English Bards and Scotch Reviewers* !⁵

I refer at some length to this period of my life and to the taste I acquired for English literature, including history and biography, because within the next two or three years I was called upon to make my choice between literature and science and had to forego the claims of my first love and vow allegiance to a jealous goddess who cannot brook half-hearted devotion in her votary.

In due course I appeared at the Entrance Examination ; my teachers who had built high hopes on me were rather disappointed because my name was not to be found in the list

5 Let such forego the poet's sacred name,
 Who rack their brains for lucre, not for fame :
 Still for stern Mammon may they toil in vain !
 And sadly gaze on gold they cannot gain.
 Such be their meed, such still the just reward
 Of prostituted muse and hireling bard !
 For this we spurn Apollo's venal son,
 And bid a long "good night to Marmion".

of the scholarship-holders. I myself took the matter coolly and have always laughed in my sleeves at the brilliant products of the University, who sparkle for a moment and disappear in the mist—who to-day are but to-morrow are cast into the oven.

A volume can be written on *examination as a test of merit* and during my career as a teacher extending over the last 41 years, it has been my lot to come across scores, nay hundreds of "Scholars" in the competitive list who have failed miserably in later life. Even the holders of the Premchand Roychand Scholarship (the blue ribbon of our university) of the older regime have been nowhere—have sunk into oblivion, unwept, unsung. Of course I shall be told that so and so got a high appointment due to his brilliant academic career. But an accountant-general is at best a glorified clerk. Newton as a master of the mint might have been a success in view of his knowledge of physical science—he might have introduced a reform of the debased coinage. Would Queen Anne have made a right choice if she had offered the portfolio of Finance to the inventor of Calculus? I am afraid as Lord of the Treasury, Newton would have been a hopeless failure. Those who have shone as brilliant luminaries at the Calcutta Bar during the last half-a-century seldom wore feathers in their academic caps. W. C. Bonnerji, Monmohon Ghosh, Taraknath Palit, Satisranjan Das and a host of others have got on splendidly well despite their poor academic qualifications. Anandamohan Bose, the first Indian Wrangler and Premchand Roychand Scholar to boot, was by no means conspicuous by his success at the bar.

It is the steady, lifelong devotion to a subject or cause which counts. Moreover a scholar who is "square" in all subjects generally tops the list in competitive tests. But as Pope rightly observes:—

"One science only will one genius fit."

However I shall not labour this theme further at this stage. My father was now becoming involved in serious pecuniary embarrassments. His estates began to be sold one

after another. From a creditor to a debtor is but one step. It is a source of gratification and pride to me that his debts were debts of honour and he scrupulously paid them off.⁶ I well remember the pathetic scene of my mother sobbing and with tears in her eyes, signing away the landed property, which was purchased in her name with the proceeds of the sale of her ornaments and which really belonged to her as *stridhana*.⁷ It now became necessary to curtail our household expenses and the first step towards it was to break up the Calcutta establishment. My parents went home and resided there while my brothers and I went into lodgings.

I took my admission into the Metropolitan Institution of Pandit Iswarchandra Vidyasagar, the college department of

⁶ Mr. Akshay Kumar Chatterji has lately drawn my attention to the following reference to one particular transaction evidently from his own pen :—

“Ramratan Chatterji, who was divisional officer (in the Eastern Canal Division) in the district of Khulna, was posted at Surkhali : he made the acquaintance of the Deputy Magistrates of Khulna, namely Bankim Chandra Chatterji, Gourdas Basak, Iswarchandra Mitra and Munsiff Balaram Mallick as also of the Zemindar of Raruli-Katipara, the late Harishchandra Ray, father of Dr. P. C. Ray. In early age his only son Akshay Kumar while at Calcutta for education used to reside in the house of Harishchandra. With the help and advice of Harishchandra Ramratan took *maurasi* lease of a large tract of land in the Sunderbans, which has now turned out to be a profitable transaction. Relying on the honesty of Harishchandra he advanced a large sum to him without any documentary evidence. Harishchandra was the worthy father of a worthy son. When he felt unable to pay off his debt of honour to Ramratan, he executed a registered deed of sale of a valuable property near his home in favour of Ramratan who however was kept in the dark about the matter till long afterwards. One day when Ramratan met Harishchandra, the latter put the deed into the former's hands and begged to be exempted from cash payment of the debt”.—Extracts from “*Vansa-Parichaya*” (annals of families), vol. ii, p. 366.

⁷ What constitutes *stridhana* (lit. married woman's property) is a topic regarding which Kamalakar says in the *Vivada Tandava*, “the lawyers fight tooth and nail”. The curious reader may consult Gooroodas Bannerji's *The Hindu Law of Marriage and Stridhana*, Lect. VII, p. 275.

which had recently been opened. This was the first bold experiment in India of making high education as cheap as secondary education. The fee in the college was the same as in the school, namely rupees three. More than one reason determined my choice of Vidyasagar's college. In the first place the Metropolitan Institution was a national institution and something we could look upon as our own ; in the second place Surendranath Bannerji, who was almost the god of our idolatry, was Professor of English prose literature and Prasanna Kumar Lahiri, a distinguished pupil of Tawney (of the Presidency College, a learned Shakesperean scholar) was Professor of poetry. I took care, however, to attend lectures on Chemistry in the First Arts Course and on both Chemistry and Physics in the Bachelor of Arts Course at the Presidency College as an external student. Chemistry was then a compulsory branch in the F.A. Course. Mr. (afterwards Sir Alexander) Pedler was a first-rate hand in experiments ; his manipulative skill was of a high order. I began almost unconsciously to be attracted to this branch of science.

Not content with merely seeing the experiments performed in the class-room, myself and a fellow student set up a miniature laboratory in the lodgings of the latter and we took delight in reproducing some of them. Once we improvised an oxy-hydrogen blow-pipe out of an ordinary thin tinned sheet of iron with the aid of a tinker. With such crude apparatus the leakage of oxygen into the hydrogen tube could not be prevented and a terrible explosion took place when the mixture was lighted. Fortunately, we escaped unhurt. Although Roscoe's *Elementary Lessons* was the text, I took care to have about me and go through as many works on Chemistry as I could lay my hands on.

My predilection for Chemistry induced me to choose the "B" Course. For the B.A. examination English was then a compulsory subject. Morley's *Burke* and Burke's *Reflections on the French Revolution* were the prose texts among others and Surendranath Banerji's exposition of both was as masterly

as attractive. At this period of my college life I had to suppress my passion for literature as my attention was much distracted by some rival pursuits. I had gained as I have already said a passable acquaintance with Latin and French by my own unaided efforts and Sanskrit I learnt as a matter of course—the first seven cantos of *Raghuvansam* and the first five of *Bhattikavyam* were texts for the F.A., and also in my private capacity with the aid of a Pandit I tasted the beauties of some cantos of another peerless production of Kalidasa, the *Kumarasambhavam*. I had by now begun to cherish the hope of competing for the Gilchrist scholarship examination, the standard for which was the same as that of the London University Matriculation and for which a fair acquaintance with Latin, Greek or Sanskrit, French, or German, was essential. My preparation for this competitive ordeal went on secretly, my eldest brother and a cousin of mine being alone taken into confidence. I was particularly careful in maintaining privacy lest in case of failure I should bring down on me the sneers and ridicules of my fellow-students. By and by the secret however leaked out and a class-fellow, who stood very high in the University examinations, in my hearing taunted me with the remark that my name will appear in a special edition of the London University Calendar. I did not build high hopes of coming out successful and as several months elapsed before the result was out, I gave up all hopes. One day while at the college, and before the lectures had commenced, I was shown a paragraph in the *Statesman* announcing that I was one of the two winners, the other being Bahadurji, a Bombay Parsee. The Principal soon after sent for me and offered me his congratulations and the *Hindu Patriot* then under the editorship of Krishnadas Pal wrote that “I had added a new feather to the cap of the Institution”. I could not, however, make out how much my instructions at the particular college had to do with the affair.

My father was then at Jessore negotiating for the sale of the Pattani Taluk Dhopakhola, near Jessore, where there is

now a railway station, to meet the demands of his exacting creditors ; he was informed of my intention to proceed to England and readily assented. I also wrote to a cousin of mine at Raruli enclosing the cutting from the *Statesman* in the letter which concluded with these words, which are still engraven on my memory. "Be so good as to convey this news to my mother who, though disconsolate at first, will doubtless be prevailed upon to consent to my temporary exile for four years". I may add here that in those days it was considered quite the fashion among college-educated youngmen to write in English. Now-a-days this would bring derision on the writer, and he would be regarded as a prig or pedant.

My mother did not raise any objection to my going to England. She had imbibed enlightened ideas from my father and did not set much store by the notion prevailing in those days that by undertaking a distant voyage across the seas one lost his caste. I went home to bid her farewell—I was deeply attached to her and the parting scene was exceedingly painful and it was with a heavy heart that I took leave of her. I consoled her by assuring her that if I were successful in life (I am speaking of "success" here in the ordinary accepted sense) my first duty should be to restore the family estates and to repair the ancestral residence, portions of which were fast falling into a dilapidated condition. I confess my outlook of life in those days was circumscribed by the mental horizon of my blurred vision. Providence had, however, ordained otherwise and by and by I learned that there are other and better ways of spending or utilising one's earnings than by investing them in landed properties.

CHAPTER V

DEPARTURE FOR EUROPE—EDUCATIONAL CAREER IN ENGLAND—"ESSAY ON INDIA"—TOUR IN THE HIGHLANDS

I now began to prepare myself for the voyage and made purchases for the outfit with the help of Devaprasad Sarvadhikary, my former classmate at the Hare School. The change in the mode of life was to be so abrupt that for a time I became almost bewildered. As a preliminary training I began to frequent some cheap restaurants so as to learn the art of dining *à la européenne*. The *Khansamas* (waiters), to whom I paid some tips, gladly gave me hints as to how to use the fork and the knife and how to put the two together almost parallel when a particular course was finished and to keep them at a re-entrant angle when you do not wish your dish to be removed. Soon I came to learn that Dwarka Nath Ray, younger brother of Dr. P. K. Ray, was about to proceed to England for studying medicine and I sought him out and we agreed that we should be fellow-passengers.

We booked our berths for Rs. 400/- each, first class saloon, per S.S. *California*, Anchor Line, Captain Young. As it was the height of the monsoon season and as we sailed directly from Calcutta to London there were only a limited number of passengers. When my friends saw me off and I was on board the steamer I was in good spirits and I remember how I at once entered into a lively conversation with an English passenger. He hinted at my using bombastic terms. I confess, in those days, I was a little fond of the Johnsonian style. Our steamer began its outward journey cautiously under the guidance of the pilot and, when it had proceeded a few miles off Pulta, a peculiar, uneasy sensation began to creep over me. I felt a vomiting tendency ; in fact, the much dreaded sea-sickness

was on me. D. N. Ray who had already learned the European mode of living under his brother's roof was quite at home throughout the voyage and was proof against sea-sickness. His appetite was voracious and he did ample justice to the dishes. Soup, boiled and fried potatoes, and pudding were my main support. The Head Steward taking pity on me used to give me condensed milk and a roll in my cabin when I could not sit at the table on account of sickness.

Our steamer at the end of 5 or 6 days called at Colombo. The sight of land gladdened us and we got on shore and saw the sights. Here we learned, if my memory serves me right, that the Battle of Tel-el-Kebir had been fought and Arabi Pasha taken captive and that the passage through the Suez Canal would not be in danger. I remember a line or two in a Ceylon paper taking Sir William Gregory, ex-Governor of Ceylon, to task for championing Arabi as a leader of Egyptian nationalism "with a chivalrous pertinacity, worthy of a better cause".

From Colombo to Aden was another sore trial to me, the vessel at times rocking violently and appearing at every turn to go underneath the deep. The most remarkable thing was that as soon as the sea became calm the nausea disappeared all at once and I forgot that I ever was the victim of seasickness. When the steamer called at Aden, Arab urchins besieged it and began to swim about crying: "Have a dive", "Have a dive"; passengers began to throw small coins into the water and they were readily picked up by the expert divers. We went ashore and found the bazar shops mainly kept by Bombay people.

Our progress through the Red Sea and Suez Canal was quite safe. We learned at Ismalia to our relief that there was no danger of our steamer being the target of sharp-shooters on the shore. When we got on shore at Port Said we found there a mixed population and the Egyptians speaking French freely but there were certain things which quite disgusted us. I have a faint recollection of Malta and our last halt was at Gibraltar. Here grapes were being hawked about—a penny for a

bunch weighing a pound. When we were rounding the cape we were told that the Bay of Biscay was dangerous for navigation. Little did I then dream that another steamer of this line under the same Captain would come to grief several years later (1892) on that very spot and be wrecked with a precious load of passengers including Mrs. Boutflower, wife of the Professor of Muir Central College, and her children ; the the professor, I believe, was a brother-in-law of Mr. Paul Knight of the *Statesman*.

During a voyage, to lounge in a deck-chair and indulge in day-dreams is a favourite way of whiling away time.¹ Some passengers borrowed books from the library attached to the saloon, but these were generally of a frivolous, trashy character. Fortunately, I had provided myself with a stock of books of my own. Smile's *Thrift*, I well remember, was a boon companion ; from my boyhood almost instinctively I was of thrifty habits and the perusal of this book further confirmed them. Spencer's *Introduction to the Study of Sociology* was another

¹ In the days of the sailing ships when it was also necessary to double the Cape the voyage often took several months and the dreary tediousness was whiled away in other ways. Macaulay's description may be quoted here :

"There are very few people who do not find a voyage which lasts several months insupportably dull. Anything is welcome which may break that long monotony, a sail, a shark, an albatross, a man overboard. Most passengers find some resource in eating twice as many meals as on land. But the great devices in killing the time are quarrelling and flirting. The facilities for both these exciting pursuits are great. The inmates of the ship are thrown together far more than in any country-seat or boarding house. None can escape from the rest except by imprisoning himself in a cell in which he can hardly turn. All food, all exercise is taken in company. Ceremony is to a great extent banished. It is every day in the power of a mischievous person to inflict innumerable annoyances ; it is every day in the power of an amiable person to confer little services. It not seldom happens that serious distress and danger call forth in genuine beauty and deformity heroic virtues and abject vices which, in the ordinary intercourse of good society, might remain during many years unknown even to intimate associates."

work which made a deep impression on me—I have the copy still with me. I had also Kaliprasanna Ghosh's *প্রভাত চিন্তা* (Morning Thoughts). Rabindranath was then scarcely known. He had been to England a couple of years in advance of me and had published his *Letters from a tourist in Europe* in Bengali which I also provided myself with. A copy of Boswell's *Life of Johnson* in the saloon library almost captivated me.

We reached Gravesend in due course, the voyage occupying 33 days. From thence we went to the Fenchurch Street Station, London, and were received by Jagadish Chandra Bose and Satyaranjan Das, elder brother of Mr. S. R. Das, the late Law Member of the Viceroy's Executive Council. D. N. Ray, and I stayed with them a week or more seeing a good many noteworthy sights including the Tower of London and Madame Tussaud's. The Sinha brothers (the late Col. N. P. Sinha, I.M.S. and the late Lord Sinha) very kindly undertook to be our cicerones.

My imagination had conjured up gorgeous visions of the metropolis of the British Empire on the Thames ; the stupendous area it covered simply bewildered me. We put up at Gloucester Road, N.W., near Regent's Park—a quarter free from bustle and the din of vehicular traffic. All the houses in one block in this thoroughfare as also in the adjoining ones are built on the same pattern and look exactly alike. The landlady furnishes you with a latch key, but if you are a newcomer and if you are returning to your lodgings late at night and by mischance forget the number, then woe betide you! If you have to go to a distant part in the city proper you must consult the indispensable *vade-mecum*, the map of London, ascertain the longitude and latitude of the place and then take the right 'bus or the underground railway, otherwise you are apt to lose yourself in the labyrinthian maze. In the early eighties there were no "tubes". Men who have spent the best portion of their lives in London, even those who have been born and bred there, cannot manage without the aid of a map.

Fortunately, the London policeman is always at your service and to a foreigner he is particularly courteous and obliging. He is a master of topography of the locality and has the map in his pocket. Every possible information you require is at his finger's end. "Go up, please, then take the third turn to the left and proceed straight on and then you are at the destination" and so forth. Launcelot Gobbo's description naturally comes to our mind.²

Sometimes the 'bobby' will ask you to wait a minute or two till the particular 'bus arrives and then he will direct the driver to see that you get out at the proper stop. In my student days, London had a population of four millions, the same as that of Scotland. During my fourth visit (1920) I learned that the population had increased to seven millions and the area also proportionately. Several of the ports and harbours in the United Kingdom have also made astonishingly gigantic progress, e.g., Liverpool, Glasgow, and Greenock.

I need not pursue further. During my first week's stay in London I had shaken off to a certain extent the nervousness which overtakes one in coming to a strange land and in being placed suddenly in the midst of odd surroundings. I now started for Edinburgh, which had then a time-honoured reputation as a seat of learning. Metaphysics and medicine, especially the latter, attracted pupils from far and near. Physical Science as represented by Chemistry and Physics found also eminent exponents. I was provided with introductions to some of the Indian students of medicine of whom there was even then a small colony. Miss E. A. Manning who used to take much interest in the welfare of Indian students residing in London and other seats of learning also kindly furnished me with introductions to some Edinburgh families.

Edinburgh is four hundred miles due north of London

² "Turn up on your right hand at the next turning, but at the next turning of all, on your left; marry, at the very next turning, turn of no hand, ~~but~~ turn down indirectly to the Jew's house".

and necessarily a much colder place. My London friends who knew all about the caprices of the climate of the northern city had taken good care to get me a plentiful supply of warm under-clothing and a "New Market" overcoat. One amusing incident in connection with my sartorial experience is vivid in my memory. For my ordinary suit of clothes I was taken to Charles Baker & Co., practical tailors, Tottenham Court Road. For evening parties, dinner and balls etc., I was advised to have a special dress-suit made. I confess I could not reconcile myself to the ugly, hideous-looking tail-coat. It has always been a puzzle to me how the English people so very full of shrewd common sense have not seen their way to discard this barbarous fashion. Equally inexplicable seems to be the obstinacy of their Gallic neighbours. *La belle France*, the cradle of æsthetic culture, the fountain-head of fashion since the days of Louis XIV and earlier, should certainly have done better in this respect. At any rate the English have always appeared to me to be rather stupid in the slavish imitation of *modes à la Parisienne*.

But to resume my narrative. The Indian flowing robe consisting of a *choga* and *chapkan*—such as the illustrious Raja Rammohun Ray wore while in England,—is very suitable to the purpose. I was taken to Charles Keane & Co. (as far as I remember) Oxford Street, with a sample suit borrowed from a friend. They took my measurements and I was asked to give a second fitting. When the dress-suit was ready they sent me information and I called at their shop. When I put it on, it was noticeable that, although there was no misfit, both the *choga* and *chapkan* dangled rather loosely in some places. The "fitter" himself was the first to point out the defect and anticipated the criticism that might be made by saying: "Sir, you are so very thin and lank that it requires lots of padding to make any suit fit you properly". Perhaps some reader will enjoy a hearty laugh at my expense. Possibly I somewhat resembled Ichabod Crane.

A disciple of Epictetus, and admirer of

in the

tub and of the Gymnosophists of the land of the five waters as described by Arrian and lately of Mahatma Gandhi in his loin-cloth, one whose motto in life has been plain living and high thinking must needs apologise for having to digress on such a trivial subject.

I reached my destination in the second week of October a few days before the commencement of the winter session. Edinburgh is a pretty city and the atmosphere is free from mists or the thick heavy fog which often overhangs London. There being no industries here as at Glasgow the smoke-nuisance is not so oppressive, nor is there such heavy vehicular traffic in the streets. It is surrounded by picturesque scenes and the sea (Firth of Forth) is quite near. I took my lodgings near the meadows and within a few minutes' walk of Arthur's Seat, which was my favourite resort during my holidays. On Sundays I used to take long rural walks to the distant hills and climb their tops: In those days for 12s. 6d. per week one could get a fairly comfortable furnished sitting room and a bed-room. No extra charge was made for coal, which was piled up in the scuttle and could be burnt in the fire-place *ad libitum*. A substantial penny breakfast was by no means uncommon, consisting of oatmeal porridge ("the halesome porritch, chief of Scotia's food") and milk.

I was singularly fortunate in my landlady. She with her husband and children occupied the back of the flat while the front rooms with windows facing the quiet street were reserved for lodgers. Like other Scotch landladies she was scrupulously honest and never charged me a farthing extra. Her daughter used to darn the socks each time they returned from the laundry.

The Scotch broth with its marvellous nutriment made up of the pith and marrow of bones, oatmeal, and chopped carrot and turnips is simply unrivalled both in quality and cheapness. I well remember an incident in connection with the Scotch broth. I happened to spend one Christmas week on the Border at Berwick-upon-Tweed and I made an excursion to Jedburgh to

see the remains of the old abbeys. I trudged along the pavement covered with snow. After seeing the monuments of piety of a by-gone age, I was on the look out for a restaurant. I was directed to a rather unpretentious house and I entered there with some degree of hesitation. The place was homely and very neat and tidy, and I had a plate of Scotch broth and a big slice of loaf served. This was quite enough for my lunch and only a penny was charged for the meal. In my days there were traditions of the students of the past generation, farmer's sons, walking all the way from their homes or driving in carts to the university and bringing with them a supply of oatmeal, eggs and butter and then getting their stock replenished now and then. Readers of Carlyle's *Life* need not be told how cheaply and economically the student managed at Edinburgh in his college days. The following extract giving a vivid description may prove interesting in view of the rapid transformations which student life has undergone not only in Edinburgh but even in Calcutta during the last half century.

"To English ears university life suggests splendid buildings, luxurious rooms, rich endowments as the reward of successful industry; as students, young men between nineteen and twenty-three with handsome allowances, spending each of them on an average double the largest income which James Carlyle had earned in any year of his life. Universities north of the Tweed had in those days no money prizes to offer, no fellowships and scholarships, nothing at all but an education and a discipline in poverty and self-denial. The lads who went to them were the children, most of them, of parents as poor as Carlyle's father. They knew at what a cost the expense of sending them to college, relatively small as it was, could be afforded; and they went with the fixed purpose of making the very utmost of their time. Five months only of each year they could remain in their classes; for the rest of it they taught pupils themselves, or worked on the farm at home to pay for their own learning".

"Each student, as a rule, was the most promising member of the family to which he belonged, and extraordinary confidence was placed in them. They were sent to Edinburgh, Glasgow, or wherever it might be, when they were mere boys of fourteen. They had no one to look after them either on their journey or when they came to the end. They walked from their homes, being unable to pay coach-hire. They

entered their own names at the college. They found their own humble lodgings, and were left entirely to their own capacity for self-conduct. The carriers brought them oatmeal, potatoes, and salt butter from the home farm, with a few eggs occasionally as a luxury. With their thrifty habits they required no other food. In the return cart their linen went back to their mothers to be washed and mended. Poverty protected them from the temptations to vicious amusements. They formed their economical friendships; they shared their breakfasts and their thoughts, and had their clubs for conversation or discussion. When term was over they walked home in parties, each district having its little knot belonging to it; and known along the roads as University scholars, they were assured of entertainment on the way.

As a training in self-dependence no better education could have been found in these islands".

I have been to Edinburgh and to other Scotch cities several times since then; but the aspect of city life has undergone material changes. The Highlands are no longer sequestered nooks. Thanks to the halo of romance cast about them by Scott and also to the weird scenery and the railways and motor buses ploughing them, swarms of tourists now flock there including American millionaires. The latter also rent shooting lodges for the season. However, the Scotch are the most industrious and adventurous people on earth. Dundee has practically a monopoly of jute and the mills—some three scores in number on the Hughli—are almost all managed by the canny Scotch. Glasgow bids fair to be second only to London. Within the last fifty years there has been an immense accession of wealth in Scotland. Edinburgh itself has undergone rapid and material transformation. Although not a centre of commerce or industry, retired Anglo-Indians drawing fat pensions and merchants who have made their piles abroad choose to live here.

Beautiful villas have sprung up all round. The new Edinburgh is extending fast. The simple, frugal habits of the people have almost disappeared and they have not been slow to adopt the luxurious habits of the modern sybarites. Burn's admonition has been forgotten:

"And O' may Heaven their simple lives prevent
From luxury's contagion, weak and vile!"

At the commencement of the winter session I enrolled myself as *Civis academiae Edinburgensis* and joined the classes in preparing for the First B.Sc. examination, namely Chemistry, Physics and Zoology ; Botany was reserved for the summer session (May, June and July) since towards the close of autumn "leaves have their time to fall and flowers to fade". In winter the trees are denuded of their leaves and their bare skeletons and frost-beaten twigs are often snow-clad. Tait's exposition of the general properties of matter was illuminating and admirable ; but I confess the text-book suggested for reference—Tait and Thomson's (Kelvin's) *Natural Philosophy* was a bit stiff and a hard nut for me to crack. I attended two courses of his lectures in two consecutive sessions, but it did not take me long to discover that I was born for Chemistry. Even at Calcutta I felt attracted towards her and now I began to pay her assiduous court, not that I neglected other branches.

My teacher of Chemistry, Alexander Crum Brown, was then forty-four years of age. The junior class consisted of 400 to 500 students, almost all of them meant for the medical career. Scotch boys coming fresh from homes full of life and animal spirits, like so many colts, begin with a demonstration of welcome when the Professor enters the class-room ; before he puts in an appearance they generally sing snatches of songs. Crum Brown was a bit fidgety in such a big class and it was not an easy thing to maintain order ; his pupils were not long in discovering his weakness and dramatic or pathetic scenes used to occur now and then. Whenever the former betrayed his nervousness his pupils took advantage of it. They used to rub their boots on the floor or even to stamp upon it or make some such demonstration ; this had the effect of intensifying his fidgetiness. "Oh ! gentlemen, if you go on this way, I can't proceed with my lectures". This appeal had its effect and the students were pacified. Crum Brown was full of *bonhomie* ; there was in him a large dose of *noblesse oblige*—in a word he was a perfect type of a gentleman. His erudition was vast and he was also a linguist. He even learned a

bit of Chinese. His capacious mind could conceive abstruse mathematical problems and he even made some contributions to the physiology of the ear. Along with his colleague (in the department of *Materia Medica*), Thomas Fraser, he may be reckoned as one of the founders of that branch of Pharmacology which deals with the relation between constitution and the therapeutical properties of drugs. It was, however, in the advanced classes, and notably in any course of special lectures e.g., on Crystallography, that his thorough grasp of the subject and his best acquirements shone forth brilliantly. The emoluments of the Professors in those days were almost princely compared with those of similar occupants of the chairs in the sister British Universities, including Cambridge and Oxford. All the fees (four guineas for the systematic and three guineas for the practical classes) went directly into their pockets.

Crum Brown was now growing indolent and fat. He revelled in speculation and every student of organic chemistry must be grateful to him for the *graphic formula* which he introduced and which considerably helped the progress of our science. Although he took no part in the practical or laboratory work, it must be said to his credit that he took care to secure the services of able demonstrators and assistants—Dr. John Gibson and Dr. Leonard Dobbin, both of whom had rounded off their education in German Universities, were among them. Gibson was at Heidelberg under Bunsen and the manipulations and methods of analysis which he taught us were those of the great German chemist. I got on splendidly and was on terms of personal intimacy with both. Even after a lapse of more than forty seven years I recollect with pleasure the joy and enthusiasm with which I pursued my favourite studies. I learnt German sufficiently well to enable me to go through the literature on the chemical subject. One of my fellow-students was James (Now Sir James) Walker who hailed from Dundee and who succeeded Crum Brown on his retirement. Two other junior contemporaries who made their mark were Alexander Smith, who afterwards became Professor of Chemistry at

Chicago and later at Columbia University and Hugh Marshall well-known for his discovery of cobalt alum and his researches on persulphuric acid. Marshall was cut off in the prime of life (b. 1868 ; d. 1913) and Smith died in 1922 when he was only 57 years of age.

I was going on with my usual studies when an incident occurred which to a certain extent coloured my future career and which therefore demands attention here. Sometime in 1885 Lord Iddesleigh who as Sir Stafford Northcote had been Secretary of State for India in 1867-68, as Lord Rector of the University, announced that a prize would be awarded for the best essay on "India before and after the Mutiny." Although I was busy working in the laboratory and preparing for the B.Sc. examination, I felt tempted to enter the list of competitors. My latent, almost innate love of historical studies now woke up and for a time at any rate got the upper-hand of chemistry. I borrowed a large number of works relating to India from the University library and began to devour their contents and to make copious notes. French works were also laid under contribution, e.g., Rousselet's "*L' Inde des Rajas*", Lanoye's "*L' Inde contemporaine*" as also articles on India in the "*Revue des deux Mondes*". I soon found that it was necessary to know a little of political economy in order to be able to follow budget discussions, as also questions involving finance, exchange etc. I therefore took the bold course to go right through Fawcett's *Political Economy* as also his *Essays on Indian Finance*. As member for Hackney, the blind economist had entered Parliament and there made his mark by his thorough grasp of Indian problems and almost in my boyhood I had read in the columns of the *Hindu Patriot* the services he had rendered to our unhappy land and how he had won the hearts of our educated countrymen and also the title *Member for India*. It is enough to say that I went through almost a library of authorities on India. Articles by experts in the *Fortnightly* and *Contemporary Reviews* and *Nineteenth Century* did not escape my notice. I read also details of

Parliamentary debates on certain burning historic problems, e.g., Rendition of Mysore in the *Hansard* (1867).

I was a novice in the art of writing a book, especially of the description now required, but being an Indian I thought the opportunity should not be flung away and having accumulated a vast mass of materials I now made bold to put ink to paper. Brevity is the soul of wit. To be able to compress the essentials—the pith of the matter—within a prescribed limit constitutes the merit of the essayist. Verbosity and prolixity are to be avoided. I divided the subject matter into two parts ; part I again being subdivided into four chapters and part II into three. My thoughts flowed quickly enough and I discovered to my infinite amazement and delight that I could wield the pen with some degree of facility, at least with as much facility as I could handle the test-tube.

In due course I submitted my essay with a motto on the title-page and the name of the writer in a sealed envelope as is the custom in such cases. When the result (or award) was announced I received it with mixed satisfaction. The prize was awarded to a rival competitor, but my essay as well as another's was bracketed together as *proxime accesserunt*.

My hand-writing is bad and in those days typewriting was unknown and I had not kept a copy of my essay. I now applied for its return so that I might publish it at my own cost. The application was readily granted and when I had it back I found the opinion of one of the adjudicators affixed to it. I transcribe a few words from it, which are engraved on the tablet of my memory.

“Another remarkable essay is that bearing the motto..... is full of bitter diatribes against British rule”. I came to learn afterwards that Sir William Muir and Professor Masson were the adjudicators. Muir was a distinguished Anglo-Indian administrator and rose to be Lieutenant-Governor of the U. P. On his retirement he served for a time as a member of the Secretary of State's Council. On the death of Sir Alexander Grant he was invited to succeed him as Principal of Edinburgh

University. Muir had made his mark in the literary world by his *Life of Mahomet* from original sources, showing profound Arabic scholarship.

In his inaugural address delivered to the students of the University on the opening of the session (1885), Principal Muir referred to my essay along with the other two as "bearing marks of rare excellence". I got it printed for private circulation chiefly among the university students with an appeal addressed to them and subsequently a new edition was published for the general public. I was a believer in those days in the doctrine of mendicancy and with child-like simplicity held that if the wrongs and the grievances under which our country groaned could be brought home to the British people, they would be remedied. The disillusionment was not long in coming. There is not in the history of the world a single instance of a dominant race granting concession to a subject people of its own free will and accord. Even in a free country like England the Barons making common cause with the yeomanry extorted the great Magna Charta from the reluctant hands of King John and in the great Civil War the English people had to wade through pools of blood before they could establish the constitutional principle: *No taxation without representation*. I quote here a few lines from the appeal in the printed edition to the "Students of the University".

"The lamentable condition of India at present is due to England's culpable neglect of, and gross apathy to, the affairs of that Empire. England has hitherto failed—grievously failed—in the discharge of her sacred duties to India. It is to you, the rising generation of Great Britain and Ireland, that we look for the inauguration of a more just, generous and humane policy as to India—a policy which will not seek a justification in such platitudes as "inevitable course", "non-possumus", "eternal fitness of things"; but one whose sole issue will be a closer union between India and England. In you are centred all our hopes. The time is near at hand when you may be called upon to assume civic functions, and to exercise a potent

influence in the affairs of the Empire over which the sun never sets, and of which we glory in being citizens. Tomorrow you will be arbiters of the destinies of 250 millions of human beings, your own fellow-subjects. We fervently hope your advent to power will be a death-knell to the existing *un*-English regime, and the dawn of a brighter and happier era for India."

I took care to send a copy of my essay to John Bright with a covering letter drawing his attention to the annexation of Burma and the additional cost thrown upon the Indian taxpayer in the shape of increased duty on salt. Bright acknowledged it in a handsome letter with a slip enclosed containing the significant words, "you may make any use of it you please." I at once sent copies of it to the press including the "London Times" and one fine morning I awoke and found myself a bit famous: the posters in thick type announcing "Mr. Bright's letter to an Indian student". Reuter also flashed the substance of the letter to India which is quoted below.

"I regret with you and condemn the course of Lord Dufferin in Burma. It is a renewal of the old system of crime and guilt, which, we had hoped, had been for ever abandoned. There is an ignorance on the part of the public in this country and great selfishness here and in India as to our true interests in India. The departures from morality and true statesmanship will bring about calamity and perhaps ruin, which our children may witness and deplore".

"Now it will not be out of place to quote a few extracts from my *Essay on India* written nearly half a century ago. The essay was printed and published in 1886. I am afraid my penmanship has deteriorated of late years. Fifty years ago my style had evidently an ease and flow which I can now scarcely command. Possibly my being immersed in the labour and toil of chemical research has much to account for it.

* * * *

Extracts from *India*:—

"The part played by England in the furtherance of the intellectual progress of the Indians forms one of the brightest chapters in Anglo-Indian history. While Russia now and then closes the gates of the home universities against her own sons

(*Stepniak*, in the *Times*), England had for more than half a century unhesitatingly prescribed the works of Locke, Burke, Hallam and Macaulay as text-books in the state colleges. The minds of the educated classes have thus been steeped in principles of constitutionalism. Each and every one of them now becomes a focus of political intelligence, from which emanate and radiate principles and doctrines which, we have reason to believe, are gratefully accepted by his less advanced countrymen. The English public has yet to be roused to an adequate sense of the importance of events which are now taking place in India. Thoughts and ideas, which pervade the upper strata of society, are now percolating through the lower ; even the masses are now beginning to be moved and influenced. This latter element it will no longer do to treat as "*une quantité négligeable*". England unfortunately now refuses to recognise the hard and irresistible logic of facts, and does her best to strangle and smother the nascent aspirations of a rising nationality. The selfish, and therefore, harsh and cruel exigencies of an alien rule have imposed various disqualifications and disabilities upon the children of the soil. From the moment an Indian begins to think for himself, he probably begins to be ashamed of himself. Betwixt the ideal and the actual he sees a gulf intervening ; he finds it difficult to reconcile the practice of British statesmen with their profession. Sound statesmanship consists in foreseeing, or at least in reading the signs of the times, and acting accordingly. It has been well remarked that the French Revolution was so mighty in its consequences because it was an intellectual upheaval. Voltaire, an exile from his native land, and dependent for his daily bread upon the smiles of a foreign potentate, thereby wielded more influence than he otherwise would have done ; and what of Rousseau, the genial current of whose soul even chill penury could not freeze ? "Banished into Paris garrets" says Carlyle, "in the gloomy company of his thoughts and necessities there ; driven from post to pillar ; fretted, exasperated, till the heart of him went mad, he had grown to feel deeply that the world was not his friend, nor

the world's law..... He could be cooped into garrets, laughed at as a maniac, left to starve like a wild beast in the cage ;—but he could not be hindered from setting the world on fire. The French Revolution found its evangelist in Rousseau". Is there no golden mean between stout and stubborn denial on the one hand and humiliating surrender on the other? These are strange times we live in. An institution seven centuries old becomes in the course of as many days branded as a "nest of sinecurists". Who knows, tomorrow another Howorth will have to denounce in equally unmeasured terms the India Council and a dozen other obnoxious bureaus? Compromises, and half measures and halting policies have been tried elsewhere with signal failure. "Fifty years of concessions to Ireland" have only served to embitter her feelings against Great Britain. Will the lesson which the sister island has taught us be lost upon India?" * * * * *

"We find there is a tendency among a certain class of writers to single out some of the worst types of Mahommedan despots and bigots, and institute a comparison between the India under them and the India of to-day. This is very fair, no doubt ; but will the Mahommedan rule suffer by comparison with ours? It is forgotten that at the time when a Queen of England was flinging into flames and hurling into dungeons those of her own subjects who had the misfortune to differ from her on dogmatic niceties, the great Mogul Akbar had proclaimed the principles of universal toleration, had invited the moulvie, the pandit, the rabbi, and the missionary to his court, and had held philosophical disquisitions with them on the merits of their various religions. It might be said that the case of Akbar is only exceptional, and therefore he cannot be cited as a representative Mogul. Nothing would be a greater mistake than this. Religious toleration, backed by a policy dictated no less by generosity than by prudence, was the rule and not the exception with the Mogul emperors". * * * * *

The *Scotsman*, the leading journal of the North in reviewing the essay observed, "It is a most interesting little

book. It contains information in reference to India which will not be found elsewhere and it is deserving of the utmost notice". My fervour in this direction had, however, to be suppressed. I was soon to appear for the B.Sc. examination and the superior and more pressing calls of Chemistry could not be subordinated to those of political agitation. Assiduously I took to the pursuit of my favourite science. After taking my bachelor's degree I had to get ready for the doctorate, for which it was necessary to submit a thesis based upon my own original investigation. My time was now almost exclusively devoted to research at the laboratory and to serious studies of chemical literature in English, French and German and from 1885 till 1920 Chemistry claimed me almost exclusively as her own.

In the cold, salubrious climate of Edinburgh one can work much harder than in our own without feeling exhausted and after the day's work in the laboratory I always used to take a long brisk walk before returning to my lodgings.

I confess I did not mix much with society ; I was intimate with a few chosen families ; but somehow or other I always got on much better with the elderly male members than with the young ladies. With the former I could enter into conversation on various topics, but whenever in any party I was introduced to the latter, I became shy and nervous and the conversational stock-in-trade consisting of the condition of the weather, the climate or some such thing was soon exhausted and I had to fumble about for a new subject. Some of my Indian friends, however, were experts in the art of mixing with the fair sex. I could never cultivate the art of catching the tone of any society into which chance might throw me. It should not however be understood that I was a misogynist or insensible to the charms of the amiable sex ; in fact, I congratulate myself that I was much luckier in this respect than the great Cavendish—one of the illustrious makers of our science.

Dr. and Mrs. Kelly of *Campo Verde*, Tipperlain Road, used to hold regular receptions on Saturdays for Indian and foreign students and I was on friendly terms with the old couple. I

gratefully remember how, on one occasion, when I was ill and suffering from an attack of diarrhoea, my life-long complaint, they called on me with some especially prepared light, easily digestible but at the same time palatable dishes. I was introduced also to some of the fashionable ("swell") or aristocratic people and on rare occasions I made bold to attend even balls. My Indian costume was very much in request. Once a Moslem friend hailing from Upper India took particular care to array me in his gorgeous robes and turban. Naturally I was "the observed of all observers". Very likely they took me for an Indian prince. I went through some such ordeals as I wanted to have a glimpse of fashionable life.

In due course I presented my thesis and I also had to go through a practical examination consisting of a complete analysis of a complex ore. My examiners were satisfied and I was recommended for the Doctorate. Of course I knew it to be a foregone conclusion. I was the only candidate for the year and was in close touch with my teachers. They knew well the progress I had made and the quality of the research which was going on under their eyes and guidance.

By this time I had become so passionately fond of Chemistry that I made up my mind to protract my stay for at least another year and pursue my studies uninterruptedly to my heart's content. I was awarded the Hope Prize Scholarship and the trustees of the Gilchrist Endowment also gladly made a grant of £50 on the expiry of my scholarship. Doctorates in science in those days were few and far between—not plentiful like black berries as at present. I began to feel that I had got something like a position in social cricles. I was elected a Vice-President of the University Chemical Society and in the absence of the President (Prof. Crum Brown) I had to preside at the meetings.³ Walker had taken his Doctorate some six months

3 *Session 1887-88.*

EDINBURGH UNIVERSITY CHEMICAL SOCIETY

OFFICE-BEARERS

President

PROFESSOR A. CRUM BROWN, F.R.S

earlier. He had already imbibed a taste for Physical Chemistry, which was just then coming into vogue. He proceeded to Germany and worked under Ostwald, one of the three pioneers of this branch of Chemistry the other two being Van't Hoff and Arrhenius. On his return he was instrumental in giving an impetus to the pursuit of Physical Chemistry in England. Once I asked Prof. Dittmar of Glasgow, who often used to visit our laboratory,—he being Crum Brown's assistant at one time—as to whether I too should take up Physical Chemistry. His reply was characteristic, "Be a chemical chemist first".

A striking incident may be worth relating here as showing that accidents often play a conspicuous part in the history of

Vice-Presidents

P. C. RÂY, D.Sc. RALPH STOCKMAN, M.D.

Secretary

ANDREW KING.

Treasurer

HUGH MARSHALL, B.Sc.

Librarian

LEONARD DOBBIN, Ph.D., F.R.S.E., F.I.C.

Members of Committee

T. F. BARBOUR.

F. MAITLAND GIBSON.

D. B. DOTT, F.R.S.E.

J. GIBSON, Ph.D., F.R.S.E., F.I.C.

A. SHAND.

EDINBURGH UNIVERSITY CHEMICAL SOCIETY

SYLLABUS 1887-88.

1887.

Nov. 23. Cryohydrates and Eutectic Alloys—Professor A. Crum Brown, M.D., D.Sc., F.R.S.

Dec. 7. The Thermal Conductivity of Metals—A. Crichton Mitchell.

„ Criticism of Volhard's Method of Chlorine Estimation—
T. F. Barbour.

Dec. 20. Professor E. J. Mills' Theory of the Genesis of the Elements
—W. Peddie, B.Sc., F.R.S.E.

Cobalt Alums—Hugh Marshall, B.Sc.

1888.

Jan. 5. The Chemical Theory of the Formation of Coral Islands—
H. R. Mill, D.Sc., F.R.S.E.

William Cullen: A Biographical Sketch—Leonard Dobbin,
Ph.D., F.R.S.E., F.I.C.

„ 18. The Periodic Law—J. Gibson, Ph.D., F.R.S.E., F.I.C.

science ; but that they can be taken advantage of only by those whose minds are predisposed, as Pasteur very aptly remarks : "*Dans les champs de l' observation le hasard ne favorise que les esprits préparés*".

As Hope Prize Scholar it was incumbent on me to assist the Professor in conducting the practical work in the laboratory ; this in itself is considered a privilege as it enables one to take part in actual teaching work. Hugh Marshall was a junior student and I had often to give him hints on methods of analysis. Once I gave him some samples of salt which I had prepared for my doctorate thesis in order to test his analytical skill and also to have confirmations of my own analysis. One such contained the double sulphate of cobalt, copper and potassium (vide *Proc. Roy. Soc. Edinb.* vol. 127, 1888, pp. 267-83). Marshall used the electrolytical method as elaborated by Claisen. Copper was deposited at one pole as was quite expected, but to his infinite amazement he noticed beautiful octahedrals deposited in the solution and analysis proved them to be cobalt alum (oxidation of cobalt salts by electrolysis, *J. C. S.*, 1891, vol. 59, p. 760). One of the products of the re-action was also persulphuric acid.⁴ Thus at one bound, young Marshall became famous as a discoverer of a new, but long-expected, compound and left his contemporaries and his seniors far behind.

-
- Feb. 1. The Alkaloids—D. B. Dott, F.R.S.E.
The Heat of Chemical Combination and its Applications,—
C. E. Day.
- „ 15. Spectroscopic Analysis—J. Gibson, Ph.D., F.R.S.E., F.I.C.
Fractionation as a means of obtaining pure Beryllium Com-
pounds—T. R. Marshall, B.Sc.
Note on the Atomic Weight of Beryllium—A. King.
- „ 22. Dissociation—Professor W. Dittmar, LL.D., F.R.S.
- „ 29. Bodies found in the Urine after the Ingestion of certain
Essential Oils—Ralph Stockman, M.D.
Analytical Note—D. B. Dott, F.R.S.E.
- Mar. 7. Nitrification—Professor A. P. Aitken, M.A., D.Sc., F.R.S.E.
- „ 14. The Carbo-ketonic Ethers of Frankland and Duppa—P. C. Rây,
D.Sc.

⁴ *Proc. Roy. Soc. (Edinb.)*, vol. 123 (1888), pp. 203-4.

After taking my doctorate in Inorganic Chemistry I began to make up my deficiency by reading extensively chemical literature on the organic side and taking copious notes thereof and my work in the laboratory also progressed in this line. After the completion of the winter session of 1888 my thoughts were turned homewards. But before I could think of leaving Edinburgh I had made up my mind to indulge a long-cherished desire to see the Highland scenery. I had to live within my comparatively narrow means and could not afford any expense beyond my scholarship of £100 a year. I got only occasional small remittances from home.

During the long summer vacation I used to go to cheap but very romantic sea-side resorts in the Firth of Clyde, to Rothesay and to Lamlash (Arran). P. N. Dutt, who later on, entered the Geological Survey of India, was often my companion in these sea-side trips. We used to pool our resources and club together for the sake of economy and share the same rooms and sometimes the same bed. Compared to the English fashionable sea-side resorts like Brighton, Rothesay and especially Lamlash were remarkably cheap places and the scenery was as picturesque as it was romantic. After breakfast and a spell of morning study, we used to go out for the day on long excursions taking care to have a few sandwiches in our pockets. Drinking water there was never any lack of as the localities abounded in natural springs. My friend also had ample opportunities for geological exploration and often drew my attention to the stratifications in the rocks and to the "faults". These all-day excursions were as enjoyable as health-restoring. Sea-bathing was also an additional luxury. Even now after a lapse of forty-five years my recollection of these pleasure trips brings back an echo of the fervour of those days. From Rothesay there are numerous steamer trips and for a shilling I could go to Inveraray (Duke of Argyle's Castle and seat) and Ayrshire, where there is a monument to Burns.

I now projected a pedestrian tour in the Highlands. I had as a companion a Moslem friend of mine who had taken his

medical degree and who hailed from the Nizam's territories. We first went to Stirling and there put up in a modest farmhouse and tramped the country round about, visiting Stirling Castle, the site of the battle field of Bannockburn, and also the Wallace monument. We then passed through the districts described in the *Lady of the Lake*, a copy of which I had with me and well realised the force of the lines as regards climbing hills :

"Bend against the steepy hill thy breast
And burst like a torrent from the crest."

I enjoyed swimming in Loch Katrine. We spent one night at a hotel at Inversnaid at the head of Loch Lomond. It was during his stay here that Wordsworth wrote his beautiful sonnet addressed "To a Highland Girl". We followed the track of the Caledonian canal and stayed for some days at a neat, little cottage at Fort William. One fine morning we started for Glencoe the scene of the famous tragic massacre and covered at one stretch the whole distance of 18 miles. My friend got thirsty and drank a glass of milk from the stall of a Highland lassie, who refused to accept payment for the same, evidently as a token of hospitality shown to a foreigner. The scenery all round was picturesque and magnificent. We also climbed the top of Ben Nevis, the highest peak in the British Islands (4,400 ft.), where there is an observatory.

We then went to Inverness, a pretty city. I had been told long before that better English was spoken there, among the cultured people than even in London. The broad Scotch with an admixture of Gaelic was almost Greek to the society of London in the days of Jeanie Deans.⁵ James I (VI of Scotland) who was fond of displaying his learning and who on account of his pedantry earned from Count Sully the sobriquet

⁵ "We must a' die, sir," said Jeanie; "it is our common doom for our father's transgression; but we shouldna hasten ilk other out o' the world, that's what your honour kens better than me". *The Heart of Mid-lothian*.

of "the most learned fool in Christendom" was a butt of ridicule among his refined courtiers.⁶ Thanks, however, to the rapid means of communication and the constant intermingling of the southerners with the Highlanders, the diversities in the dialects have practically disappeared. In spite of the heroic and patriotic efforts of Professor John Stuart Blackie, who was instrumental in founding the chair of Gaelic in the University, the language is destined to become as extinct as the proverbial Dodo. Among the educated people I found nowhere any difficulty in following their spoken tongue except perhaps as regards the broad accent characteristic of the Scotch.

From Inverness we made an excursion to the memorable battle field of Culloden Moor. Slabs of stone have been placed over the remains of the various clans, which rallied round the banner of the unfortunate Prince Charlie on that fateful day and the savagery of "butcher" Cumberland is even now green in the memory of the clan's posterity.

On my return to Edinburgh I saw Crum Brown and Sir Wm. Muir. The former gave me a testimonial speaking in high terms of my chemical attainments and also letters of introduction including one to Lord Playfair, Crum Brown's predecessor in the chair of Chemistry. Sir Wm. Muir also provided me with a letter of introduction to Sir Charles Barnard, who on his retirement from the first Lt. Governorship of Burma, had been appointed a member of the India Council. Barnard was one of nature's gentlemen—genial, kind-hearted and generous. I came to know afterwards that he had on more than one occasion relieved Indian students in England in their pecuniary difficulties. Sir Charles invited me to lunch and undertook to do all that lay in his power to get me appointed to the Educational Service in India. Lord Playfair also wrote on my behalf to Lord Cross, the then Secretary of State for India. But the odds were against me. In those days and even many years later

⁶ Admit him instantan, Maxwell. Have you hairboured sae lang at the Court? . . . —*The Fortunes of Nigel*.

the gates of the higher posts in the Educational Department which were also in the gift of the Indian Secretary were all but closed against the children of the soil. No doubt one or two solitary exceptions were made—but they were exceptions and no more.

Barnard tried his level best to get me in but to no purpose. I stayed two months at Hanwell, a suburb of London and a most pleasant countryside and utilised my time by reading in the library of the Chemical Society and taking copious notes from various works and from German Chemical Journals, which I well knew would not be available in Calcutta.

My prospects of being appointed by the Secretary of State appeared to be remote and I could not afford to stay longer in England as my funds were running low. Sir Charles Barnard had penetration enough to feel the awkwardness of my position and one day took me aside and asked me point-blank: "How long can you hold out?" He also offered me pecuniary help, which I declined with grateful thanks. The scene was, however, a pathetic one. As soon as I left him and was out in the street I almost burst into tears. Realising the hopelessness of my situation I made up my mind to return home. There was fortunately one silver lining in the dark cloud. Principal Charles H. Tawney of the Presidency College, Calcutta, was home on furlough; he was brother-in-law of Sir Charles and was putting up with him. On the eve of my leaving London, Sir Charles invited me to breakfast and introduced me to Tawney, who gave me a letter of introduction to Sir Alfred Croft, Director of Public Instruction, Bengal. Tawney's letter concluded, as far as I remember, with these words, "I am sure Dr. Rây would prove a valuable acquisition to the Department if he could be taken in".

I got ready to start for home. The Gilchrist Trust according to the conditions of my scholarship gave me £50 as passage money. I booked a second-class berth by the P. & O. Mail sailing from Brindisi, for £37, I think. With the balance I made some purchases including a third class railway ticket

from London to Brindisi. As I had hitherto no opportunity of visiting the continent I thought of availing myself of this opportunity of seeing as many places during my railway journey as I could. With this end in view, I journeyed by slow stages in a passenger "omnibus" train. After seeing Paris, I passed through the South of France, crossed the Alpine range and went through several tunnels and vineyards; our train halted at Pisa for a couple of hours or so and I ran to have a look at the celebrated leaning tower. In the Italian station no drinking water is served, but there is plenty of light, cheap wine and I had often to run to the water pumps to quench my thirst. At Rome also during the short halt I walked in the streets and saw the remains of the Capitol etc.

The Italians are merry, vivacious and communicative and not at all reserved like the English, and my fellow passengers were eager to enter into conversation with me; with my slight knowledge of French I got on as well as I could. Fortunately for me there was an Austrian among them who could speak English with facility and we became quite friendly. He was bound for Trieste. When he came to know that I was going to catch the mail at Brindisi, he consulted the time-table and gravely shook his head. "I am afraid," he said, "You won't be able to catch the mail as this train will reach the place a day late." He began to feel uneasy about me and at one of the long stoppages he consulted the station master as to how to get me out of the difficulty; the latter suggested that as the corresponding mail train was shortly expected I should have my third-class ticket converted into the second-class ticket by paying the difference, which amounted to £3 or so and it was just what I could afford to spare leaving a few shillings in my purse.

CHAPTER VI

RETURNING HOME—PROFESSOR AT PRESIDENCY COLLEGE

I reached Calcutta on the first week of August 1888 after exactly six years' absence. During my stay at Edinburgh my correspondence with my eldest brother, who was a pleader at Diamond Harbour, was limited to a fortnightly post-card. He in turn used to write to our parents at home informing them of its contents. I did not let them know the specified time and the name of the steamer by which I was coming to Calcutta, because I wanted to relieve them of any unnecessary expenses which might be incurred for me as I had all along the vague surmise that my father's financial difficulties must have gone on increasing year after year. I left my luggage in my cabin and as my purse was empty, I borrowed Rs. 8 from the Head Purser. I had many friends in Calcutta and drove to one of them. The first thing that I did was to borrow a *dhoti* and a *chaddar* and change my outlandish mode of dress. After halting a day or two I went home to my native village and for the first time in my life I journeyed by railway from Sealdah (The Calcutta Terminus of the E. B. Ry.) to Khulna. In 1882, the year I left for England, surveys were being made for the proposed railway and I heard that it was to be financed by the Rothschilds. I was no longer a Jessorean, but a Khulnaman. The new district of Khulna had been carved out of a slice of Jessore and another of the 24 Pergannas and Barisal.

When I saw my mother, she burst into tears, weeping that my younger sister was no more to welcome me. Here I must pause to relate an incident which must be taken for what it is worth or as a verification of the adage "coming events cast their shadows before". One morning at Edinburgh just before I woke up I dreamt a dream which was an exact reproduction of

the above scene. It is a pity I did not note down the date as in that case I might have got further proof in support of clairvoyance.¹ After staying a few days at home I hastened back to Calcutta and put up for a time with an intimate friend of mine, the late Amulyacharan Bose, M.B. about whom I shall have occasion to speak later on. I was now anxious to get an appointment in the Bengal Education Department as a Professor of Chemistry and called on Croft and Pedler. I also went to Darjeeling and sought an interview with the Lieutenant Governor, Sir Steuart Bayley for the purpose.

Chemistry was obtaining slow recognition as an important branch of study in our colleges ; but the Presidency College was the only institution where systematic courses of lectures illustrated with experiments were given. Private colleges were few in number and their resources being limited they could not afford to open Science Departments. Students from these colleges were, however, allowed to attend the lectures at the Presidency College on payment of nominal fees. The Indian Association for the Cultivation of Science, founded by Dr. Mahendralal Sircar in 1876, also made arrangements for courses of lectures in Chemistry and Physics and as these were open to the public, Dr. Sircar, I believe, made a representation to the Government requesting it to discontinue allowing students from private colleges to attend lectures at the Presidency College as otherwise the Science Association lecture-benches would be more or less empty. This is no reflection on the Science Association but rather on the mentality of the average Indian youth ; unless a subject is prescribed for examination, no one would care to have anything to do with it. The Government also would have been soon compelled to adopt this course on its own initiative as admissions were getting

¹ Cf. "There, too, he was visited by a strange dream—of the women of Nice bearing his mother to the grave—which, as he declares, came to him on the very day when she died far and off on the other side of the world of waters". Travelyan: *Garibaldi and the Thousand*, pp. 17-18.

larger year to year and B. course (Science) growing to be popular. In the eighties of the last century Chemistry had made gigantic strides and it was realised that the mere delivery of elementary courses of lectures would not be adequate to cope with the requirements and that special arrangements must be made for practical and laboratory teaching. Pedler had on these grounds written to the Director of Public Instruction to move the Bengal Government for the sanction of an additional Professor. It was at this psychological moment that I returned from Edinburgh as an applicant for a post.

The history of admission of Indians in the higher services is a history of good intentions and large promises, but poor performances. If one has the patience to go through the Parliamentary debates on the renewal of the Charters by the East India Company in 1833 and 1853, he will not fail to find noble sentiments, nobly uttered. Macaulay's peroration (1833) is often quoted as a classic on this subject. He had come out to India in 1834 as Law Member and had come into close contact with English-educated Indians, and possibly in London with the illustrious reformer Rammohan Ray and he fully realised what Indian intellect saturated with western literature was capable of. In the fervid peroration of his speech on the renewal of the Charter of the East India Company occurs the memorable passage which is quoted here :

"It may be that the public mind of India may expand under our system till it has outgrown that system; that by good government we may educate our subjects into a capacity for better government; that, having become instructed in European knowledge, they may, in some future age, demand European institutions. Whether such a day will ever come I know not. But never will I attempt to avert or to retard it. Whenever it comes, it will be the proudest day in English history".

As the rich milk deprived of its cream is a poor lacteal substitute, so Macaulay's pious expressions of good-will towards his distant fellow subjects in filtering through the India Office and the bureaucratic shelves of the not-very-disinterested distant proconsuls ended only in empty verbiage. The poet-Viceroy of India who inherited some of the literary gifts of his father

wrote to the Secretary of State with almost brutal candour. A compromise was effected and the "Statutory" Civil Service was created.²

Indians of approved merit and sometimes aristocratic "noodles", were drafted into the Civil Service who would draw two-thirds the pay of the grade. The competitive examination in England was to be thrown open only to Britons (including of course the Irish). These regulations also permeated the Educational Service. Jagadis Chandra Bose, who had returned home three years before me, after a brilliant career at Cambridge and London, and who had to encounter untold hardships in entering the Higher Service in the land of his birth, was only allowed to cross its threshold on condition that he should waive his claim to the full pay of the grade and draw on the two-thirds scale. It was only in rare cases that the children of the soil were admitted to the Higher Service, which made darkness more visible. As a rule Indians of even approved merit could only enter the subordinate branch of the Service. Agitation in India as also in the British Parliament by friends of India against the virtual exclusion of Indians could no longer be ignored. The government of Lord Dufferin under instructions from the Secretary of State appointed the "Public Services Commission" with a view to devise means for finding extended employments for Indians. The recommendations of the Commission were of the nature of a compromise ;

² Lord Lytton, Viceroy of India, in writing in a confidential despatch to Lord Salisbury, the Secretary of State for India, assigned among others the following reason for instituting the Statutory Civil Service. "No sooner was the Act (1833) passed than the Government began to devise means for practically evading the fulfilment of it . . . We have had to choose between prohibiting them and cheating them, and we have chosen the least straightforward course . . . are all so many deliberate and transparent subterfuges for stultifying the Act and reducing it to a dead letter . . I do not hesitate to say both the Government of England and of India appear to me up to the present moment unable to answer satisfactorily the charge of having taken every means in their powers of breaking to the heart the words of promise they had uttered to the ear".

whatever might be done to satisfy the aspirations of the Indians, every care must be taken to safeguard the interests and privileges of the dominant race. Two distinct Services were created—one the *Imperial* and the other the *Provincial*. The former was meant to be reserved for the Britishers and the latter for the Indians; in the former again the average emoluments worked out to nearly double that of the latter.

For about a year, i.e. from August 1888 to the end of June 1889, I was without any occupation and felt uncomfortable. A chemist *minus* his laboratory, as I once told Tawney, is something like Samson shorn of his locks. He is as helpless as powerless. During this period I was mostly under the hospitable roof of Dr. and Mrs. Jagadis Chandra Bose and I spent the time in reading chemical literature and in botanising. I collected and identified several specimens of plants round about Calcutta with the aid of Roxburgh's *Flora Indica* and Hooker's *Genera Plantarum*. At long last an additional chair of Chemistry at the Presidency College was sanctioned and I was posted as temporary assistant Professor on a pay of Rs. 250/- per month. This was the maximum initial salary which the local Government was entitled to offer.

I confess, coming fresh from my six years' stay in England and after breathing the free atmosphere of the land of liberty, I was full of mettle and had imbibed exaggerated notions of the rights of our people. I went straight to Darjeeling and spoke to Croft of the injustice done to me. If a British chemist of my qualifications had to be imported he would at once have been appointed by the Secretary of State to the "Imperial" branch of the service with the grant of passage money. Croft almost got into temper and exclaimed: "There are other walks in life open to you. Nobody compels you to accept this appointment." I pocketed this affront with as good grace as I could. In justice to Croft I must say that the temper he showed was more assumed than real. He was well aware that he was but the limb of the huge relentless machinery of the Government and that it was not for him to reason why

but to obey the mandate. A couple of years later I came to know that he at any rate tried his best to get me into the superior service. Sometime in 1891, a distant relation of mine who was acquainted with a confidential clerk in the Secretariat somewhat officiously put into my hand a slip of paper containing these relevant lines quoted from a report by the head of the Education Department. I reproduce the contents from memory: "On the retirement of Messrs. Brahmo Mohun Mullick and Bellett, two more vacancies will occur (in the Imperial Branch) one of which will have to be given to Dr. Prafulla Chandra Rây of whom Mr. Pedler speaks highly." It will thus be seen that although I was temporarily placed in the "unclassified" list on Rs. 250, it was eventually meant that I should in due course be translated into the higher branch with the sanction of the Secretary of State.

But fate proved not very propitious. Sir Charles Elliott had by this time taken up the reins of administration in Bengal. He found to his dismay that a few more Bengalis after distinguished careers at Cambridge, Oxford and London had entered the Education Department in the "unclassified" list and were knocking at the gates seeking admission in the Imperial Branch. If I were taken into the Higher Service a bad precedent would be created, for with what show of reason could others be denied the same privilege? Steps should therefore be taken to avert the calamity of the Education Department being swamped by the influx of the undesirables. He issued a *ukase* to the effect that pending the sanction of the recommendations of the Public Services Commission by the Secretary of State for India, no fresh admission of Indians into the superior branch should be made.

But the India Office was in no hurry for our sake. Had the interests of the civil or military service, manned almost exclusively by Britishers, been in any way affected, the life of the Secretary of State for India would have been rendered miserable; he would have been bombarded with interpellations in Parliament. Deputation after deputation would have waited

upon him urging immediate redress ; the *London Times* would have scented danger, threatened him with anathemas—witness the recent Lee Commission. It is, however, time I left this chapter in my life and turned to my career at the Presidency College.

I took up my duties at the commencement of the session in July 1889. It was indeed a relief to me. Work, by which I mean laboratory work, had been the main sustenance of my life and I was simply starving for it. The chemistry department was then located in the one-storied building which accommodated the old Hare School, previous to its translation to the present commodious stately structure in 1872. The space occupied by it will come up to a bare fraction of that occupied by the present department. This again may give an idea of the progress achieved by this branch of science.³ By a strange coincidence the chair on which I sat in my private room was placed almost exactly on the spot where I sat on the bench in 1870 when I first took my admission into Hare School.

To be a successful teacher, especially of junior students, who are just commencing a course in elementary Chemistry, it is essential that he should have a neat hand in conducting experiments and that these should be so arranged as to make the lectures not only interesting but easily intelligible. An appointment is often made on the strength of academic qualifications ; a candidate may have done admirable research work, but I have often noticed miserable failures from such selections. It should be *sine quâ non* for a lecturer in Chemistry that he should have gone through a probationary stage as a class-assistant. It is a recognised custom with would-be-attorneys and legal practitioners that after securing the necessary academic qualifications, they should be apprenticed as “devils” to a firm or to a professional veteran for a term of years before they are allowed to launch on an independent career. A master or

³ See : *Fifty years of Chemistry at the Presidency College*, vol. i. 1914, p. 106.

doctor of science who receives his degree on the basis of a thesis may cut a sorry figure when suddenly called upon to lecture to junior pupils. He seldom acquires the manipulative skill of filling an eudiometer with mercury and displacing the latter with, say, two volumes of hydrogen and one volume of oxygen, preliminary to exploding the mixture. He is shy and nervous in regard to such experiments and he often avoids the difficulty by omitting them altogether or contents himself with exhibiting the apparatus on the lecture-table or, in the absence of the latter, drawing diagrams on the black-board. Fortunately for me I found a tradition already built up at the chemical department. Pedler was an expert in gas-analysis and he was almost unrivalled as an experimenter. His manipulative skill was the envy of us all. He had trained under him one or two able hands, notably Mr. Chandrabhusan Bhaduri, who began his career as a class-assistant. My ambition was to qualify myself as a successful lecturer and with this end in view, I put pride into my pocket. England-returned graduates are sometimes found to be a bit stuck-up. They think that they will lose caste or at any rate prestige if they have to learn anything from their subordinates. I am thankful that this sort of weakness was never able to get the better of me. I began my novitiate with the aid of Bhaduri and sometimes of Pedler. I went through repeated rehearsals of class-experiments requiring dexterity. Within a short time I shook off my nervousness and when the next session commenced I found to my delight that I was by no means unequal to the task.

As far as laboratory work and the conducting of practical classes were concerned I was not much in need of guidance as I had a fair amount of experience to my credit ; indeed as I have already hinted, as Hope Prize scholar, it fell to my lot to assist my Professor in this line. My first three months' duty was arduous but enjoyable. I did not trust myself to mere extempore delivery—I often used to write out the substance of my lecture beforehand and it was with relish and zest that I entered into my new sphere. I discovered that I was as much

in my element as a fish in water. Youngmen make almost irretrievable mistakes in the choice of a profession especially in our country. Without bestowing any thought they rush headlong into a particular career and find too late that they have mistaken their vocation and for this tragic consequence-guardians are more to blame. Emerson very aptly says somewhere that parents in forcing their attention on over-grown children act more like malefactors than benefactors. It is the case of forcing a round peg into a square hole with the blow of a hammer. After the first three months of the session, i.e. July, August and September, the Puja-holidays intervened and Pedler went home on three months' leave and I was left in entire charge of the department. This was in one sense the busiest period in my educational career—sometimes I had to lecture to three classes in succession, but the work itself was my delight and, as I experienced almost a romantic sensation, I did not break down, nor did my interest flag.

After having acquired some experience as a teacher and a facility in delivering lectures illustrated with experiments, I began gradually to devote my spare time to reasearch work. The adulteration of food-stuffs—a concomitant of modern "civilised life"—was becoming a growing evil. Ghee (clarified butter) and mustard oil are practically the only sources of fat which enter largely into the dietary of the people of Bengal. Articles in the ordinary markets which are sold as ghee and mustard oil are far from being pure. It is however by no means an easy task to detect by chemical analysis the adulterants used and their percentage. I undertook a searching examination of the food-stuffs of this description. I procured samples of these articles from most reliable sources and also had them prepared under my personal supervision. For instance, I had cows and buffaloes milked before my eye and from the milk thereof I prepared butter. I got mustard oil pressed from the seeds as also the various other oils used as adulterants. The composition of butter fat derived from the Indian cows differs somewhat from that of the British cows and hence the

analysis of the latter as published in English works on *Foods* could not be relied upon. The various samples of oils had also to be subjected to a searching investigation. The work undertaken thus involved stupendous labour and I was busy with it for nearly three years and the results obtained were published in the *Journal of the Asiatic Society of Bengal* for 1894, entitled—*Chemical Examination of Certain Indian Foodstuffs ; Part I —The Fats and Oils.*

Work in connection with social service has also been my hobby ; as a member of the Brahmo Samaj I threw myself heart and soul into its activities. It fell to my lot to organise the *Brahmobandhu Sabha* and its evening parties, so as to bring together members of our church scattered throughout the town. The Sadharan Brahmo Samaj is founded entirely on a democratic basis and is a commonwealth of the church of God. I was elected a member of its Executive Council and served in that capacity for several years.

In the beginning of the session of 1891 I had a relapse of the former fit of insomnia and I suffered badly for three months in succession. "Care-charmer" sleep was a stranger to my eyes and I had to go through the agony of keeping awake night after night and tossing in my bed now to the right, now to the left. I had to count the hours struck by the distant church-bells—my eyelids refusing to close. The fact that philosophers like Carlyle and Herbert Spencer were victims of insomnia was a poor consolation to me and did not in any way mitigate my sufferings. I used to envy the lot of the day-labourer without any roof to lie under, fast asleep, on the foot-paths of Calcutta. Oh ! what a luxury it was to me to awake after one night's refreshing sleep—tired nature's balmy restorer. I could realise every line of the immortal poet of human nature.'

"How many thousands of my poorest subjects
Are at this hour asleep! O sleep, O gentle sleep,
Nature's soft nurse, how have I frighted thee,

And, in the calmest and most stillest night,
With all appliances and means to boot,
Deny it to a King? Then, happy low, lie down!
Uneasy lies the head that wears a crown".

In my humble case my malady was not, of course, due to my "wearing a crown" but to indigestion. During the Puja holidays in October I went for a change to Deoghar, which enjoyed the reputation of a sanatorium within easy reach of Calcutta. In 1891 the place was not much frequented by holiday seekers and there were few residential quarters and these were scattered about at long distances from one another. Open spaces were plentiful. A friend of mine secured for me a thatched cottage, sadly needing repairs, which had once been occupied by a gardener. I was simply delighted with my quarters, the more so as it was in the midst of a semi-cultivated field and thus open all round. The most conspicuous figure at Deoghar was Rajnarain Bose ; thousands of Hindu pilgrims pass through this place on their way to Baidyanath, barely a mile's distance, where there is the temple dedicated to the God Siva. But Deoghar was no less a place of pilgrimage to scores of educated Bengalis, who used to come here to enjoy the company of the venerable sage. He had suffered from many domestic afflictions and was bent double with age but his conversations were an intellectual treat and they sparkled with flashes of wit.

Our friend Herambachandra Maitra soon joined us. Jogendranath Bose, Head Master, Deoghar School, was another figure. He was then collecting materials for the Biography of Madhusudan Datta which was to earn for him an assured place in Bengali literature as it is unique of its kind. The letters exchanged between Rajnarain and Madhusudan, which the former placed unreservedly at the disposal of Bose form the most valuable portion of the Biography. Sisir Kumar Ghose was also living here in his own bungalow. He had practically retired from the editorial labours of the *Patrika*. I thus enjoyed good company and used to make excursions to the surrounding hillocks. Jogendranath Bose often read out to me selected

portions from his Mss. An incident—half tragic and half comic—may be related here. The place abounded with Bhela (*Sempervinus Anacardium*) trees. One day I picked up a fruit (the Indian marking nut) and thoughtlessly chewed it. As it belongs to the natural order *Anacardiaceæ* i.e. the order to which the mango belongs, I thought it harmless. Nothing happened just then. Next morning my face was swollen to large dimensions, so much so that even the eyes were not discernible. My friends got frightened. The local physician applied belladonna extract and I was soon all right. I should have remembered that the same natural order often includes both innocuous and poisonous articles. Thus potato, brinjal, red-pepper, the deadly nightshade (*atropa belladonna*) belong to the same order, namely *Solanaceæ*.

On the expiry of the Puja holidays I returned to town. A year before I had rented 91, Upper Circular Road, which was to be my residence for the next quarter of a century. It was also here that the foundation was laid of the Bengal Chemical and Pharmaceutical Works. Shortly after I began my duties at the Presidency College, my mind was much troubled over the poverty of Bengali literature on the scientific side and I seriously entertained the idea of writing a series of *Primers* on Chemistry, Botany and Zoology. I naturally took up Chemistry first and had actually made some progress with my manuscript when I gave up the task. Nature-study seems to offer better attractions to the juvenile minds and the animal and the vegetable kingdoms afford almost unlimited scope in this direction. Stories of animals, their habits, peculiarities, their distribution fascinate the imagination of the young. There are numerous books in English even on a single species—say the anthropoid apes: e.g. the gorilla, the chimpanzee, orang-outang, and these are based more or less on first-hand information. The fertilisation of the orchids again strikes one with wonder and admiration at the ingenuity of nature. The metamorphosis of insects is itself a romance in animal life of surprising interest. Here at any rate facts beat fiction. Bengal is rich in fauna and flora.

Vegetation grows here in rank luxuriance. Nature in the inclement season in England is bleak, barren and often snow-clad ; whereas in Bengal, even in the depth of winter, nature in all her glory is arrayed in gorgeous habiliments.

Just imagine for a moment what costly arrangements have to be made in cold regions for securing living specimens of trees and plants of the tropical climes—palm houses and conservatories have to be constructed for nursing them. One has only to pay a visit to the Kew gardens to realise it ; whereas in Bengal bounteous nature scatters her gifts broadcast and in profusion. If you leave out Calcutta, the whole of Bengal is practically rural and those who live in this town have only to cross the bridge at Maniktola or ferry over to the Botanical Gardens to procure as many specimens of plants as they like. The rivers again are studded with innumerable genera and species of fish and the forests and jungles with diversified animals. The whole of Bengal is Nature's laboratory. One of the main objects of teaching elementary science to children and boys of tender age is to bring out their latent powers of observation and the lessons conveyed through the life-history of a plant or of an animal are admirably calculated to serve this purpose. In what manner does a cat differ from a dog, as far as outward looks go? Go a little deeper and examine the claws, the arrangement of the rows of teeth of a cat as also of a dog. Go still deeper and examine the habits and characteristics especially the contours of the faces of these two representatives of the *canidæ* and *felidæ* and the retractile claws of the latter and the fleshy pads under their paws and the purpose they subserve. The dog, on the other hand, has no retractile claws ; his face is pointed and so on. Can even a "domestic" cat be trusted in a kitchen containing in its cupboard rich cream or fried fish or roast mutton? Further gradual developments may be made in this direction—the carnivorous beasts of the cat and dog families living in the the wilds and jungles and their geographical distribution. In short, stories of animals, as I said above, are admirably calculated

to capture the imagination of children and a Natural History profusely illustrated is to them a book of romance.

With this end in view I wrote a *Primer of Zoology* in Bengali; my knowledge of this science which I gathered during the preparation for the B.Sc. course now stood me in good stead but I had to supplement it considerably. I read a good many standard works on the subject and frequented the Zoological Gardens, in order to observe the habits of animals and often visited the Natural History Section of the Indian Museum. I dissected also a few specimens with the help of my friends Nilratan Sarkar and Prankrishna Acharyya, who had then just taken their medical degrees. I remember one early morning, as I was taking my constitutional walk, I saw a dead body of a *bham*, the Indian Palm Civet (*Paradoxurus Niger*), lying on the road side. It had evidently been killed in the small hours of the morning for its nocturnal predatory incursions into a household in that outlying part of the town. I caught hold of this zoological specimen and triumphantly carried it home and at once extended an invitation to my above medical friends to come over and join me in its dissection. We also started a Nature Club of which, besides the above, Mr. Ramabrahma Sanyal, Superintendent, Zoological Gardens, Principal Herambachandra Maitra and Dr. Bepin Behary Sarkar were members and we used to have regular meetings once a month. When I went home during the summer vacation I had some cobras caught and examined their poison fangs and studied the mechanism of snake-bite with the aid of Fayrer's *Thanatophidia*.

About this time (1891-92) another matter began seriously to occupy my thoughts. Our educated young men, the moment they came out of their colleges, were on the lookout for a situation or a soft job under the Government as now, or failing that in a European mercantile firm. The professions—law and medicine—were becoming overcrowded. A few came out of the Engineering College, but they too were helpless seekers after jobs.

Meanwhile, the adventurous non-Bengalis, notably the Marwaris from the barren deserts of Rajputana, were swarming not only in Calcutta but also in the interior of Bengal and capturing all key-points of the export and import business. In a word, the Bengalis were being worsted in the keen competition and ousted from and elbowed out of the fields actually in their possession. The college-educated Bengali youth could reproduce from memory notable passages from Shakespeare and Milton and quote *ad nauseam* Mill and Spencer and all the same would hopelessly fail in the struggle for life. Starvation stared him in the face, and yet secondary schools were multiplying and new colleges were springing up mushroom like. What to do with all these young men? The Science Course was becoming more popular day by day but the underlying vague idea of the youths or their guardians was that by learning Chemistry and Physics in preference to Logic, Metaphysics and Sanskrit, they would be able somehow or other to start industries or at any rate to earn their livelihood without hankering after services. But this had proved to be a delusion. In the nineties of the last century those students who took Chemistry in preparing for the M.A. degree (M.Sc. had not then been instituted) usually attended law lectures. What correlation exists between Chemistry and Law was the question I often used to put to them. The answer was that they fought shy of cramming the contents of a cart-load of books for the arts course and in choosing Chemistry they would have to read much less and they did not mind going through the drudgery of the laboratory work ; some no doubt confessed to a liking for Chemistry. One specific instance, which is almost typical, will suffice ; I once asked a candidate for the M.A. in Chemistry who had practised law for some time, being a B.L. (Bachelor-of-Law) as to why he left the court? The answer was ready and characteristic "Sir, if I can have the M.A. degree, then I shall have the letters M.A., B.L. suffixed to

my name and my claims to Munsiffship will be stronger thereby". "Oh Chemistry! to what purpose you are being diverted", was the exclamation wrung out of me in the anguish of my heart.

CHAPTER VII

BENGAL CHEMICAL AND PHARMACEUTICAL WORKS— ITS ORIGIN.

In Europe industry and scientific pursuits have gone hand in hand, both have advanced *pari passu*, the one helping the other—in fact, industry has, as a rule, preceded science, though based upon empirical knowledge. Soap-making, glass-making, dyeing with purple, scarlet and mineral pigments, nay, metallurgical operations, have been known for the last 2,000 years or more, long before the chemical reactions involved in them were understood. No doubt science comes in as a ready handmaid to industry. The history of the gigantic progress of industry achieved in Europe and America is a history of the triumph of researches in the laboratory. In Bengal the one thing needful was not so much the establishment of Technological Institutes as the initiative, the dash, the pluck, the resourcefulness in our youths that go to the making of a businessman or an entrepreneur or a captain of industry. The college-bred youth has been found to be a hopeless failure ; there is no driving power in him ; at best he can only shine as a tool or an automaton.

These thoughts were weighing heavy on me at the very threshold of my career at the Presidency College. How to utilise the thousand and one raw products which Nature in her bounty has scattered broadcast in Bengal? How to bring bread to the mouths of the ill-fed, famished young men of the middle classes? With this end in view I experimented with lemon juice and tried to extract citric acid out of it. In the Calcutta market, however, lemons or citrons could not be procured at a cheap rate or in sufficient quantity to make the product commercially paying. I now turned my attention to such articles as could be

manufactured on a small scale and would find a ready sale in the market. The business had to be one which would not involve the outlay of a big capital and which must not interfere with my other pressing duties. After several preliminary attempts, pharmaceutical preparations as the most suitable ones for my purpose were hit upon. I began a thorough examination of the Calcutta drug stores and made inquiries of the importers as to the quantities in which the British Pharmacopœia medicines were imported. The firm of Butto Kristo Paul & Co. were then (as perhaps now) the premier druggists and did an extensive business in this line. The late Bhutnath Paul, the life and soul of this concern, assured me that there would be no lack of purchasers provided the right sort of things was made. I was a chemist pure and simple, but not a "chemist and druggist".¹

While at Edinburgh, as members of the University Chemical Society, we used to make excursions to various chemical works e.g., Pullar's Dye-works, Perth, Mac Ewen's Brewery, Edinburgh, Distillation of Shales, Burntisland. But we were invariably refused admission into the pharmaceutical works, lest any trade secret should leak out. Such jealousy at the first blush may appear to be reprehensible, but it is none the less pardonable. Such firms have to spend a mint of money and years of labour before they can hope to work out a process which would give them a decided advantage over their rivals. Hence the impressions I gathered therefrom were not of any practical use to me. In England and Scotland Chemical Works are conducted on an extensive scale, there are sister industries side by side, the one dependent or deriving nourishment from the other. I had read in my text books

¹ This distinction is even now a subject of bitter controversy. Under date 26th November, 1837, Liebig tells the Swedish chemist (Berzelius) that "he had been some months in England, had seen a vast amount, and learnt little. England, he says, is not the land of science; her chemists were ashamed to call themselves chemists because the apothecaries had appropriated the name".

that sulphuric acid is the mother of all other industries. A visit to the mammoth sulphuric acid works of Tennant & Co., St. Rollox, Glasgow, convinced me of its significance.

When I began my preliminary trials, I had no previous experience in this line to guide my path nor any tradition to follow,—no mariner's compass to help me to steer my course. More than one third of a century has elapsed since then. The export and import trade figures show marvellous progress, but during this time very little has been effected in the chemical industry. I began with "copperas" (sulphate of iron) for which there is a demand in the Calcutta market. Scrap iron was obtainable in any quantity almost for nothing and I instituted inquiries about sulphuric acid. When I used to make chemical experiments in my early college days, I had occasion to procure sulphuric acid for this purpose from a local druggist and was even then inquisitive enough to ask of him the source of supply of this "mother of industries" and I learned that the mineral acids were no longer imported from abroad as D. Waldie & Co. of Cossipore (a suburb of Calcutta) had begun to manufacture them on a large scale.² I now

² I cull below all the available information on David Waldie : "In memory of David Waldie. Born in Linlithgow, Scotland, Feb. 27th 1813, David Waldie was associated with the discovery in 1847 of the anaesthetic properties of chloroform. Arriving in Calcutta in 1853, he became the pioneer of chemical manufacture in India. He was an active member of this Asiatic Society for 25 years and served on the Council for 10 years. Died in Calcutta, June 23rd, 1889. MURAL TABLET (Erected by Messrs. D. Waldie & Co., 1913).

"Dr. D. Waldie was elected an Ordinary Member in November 1865, and at the time of his death was a member of our Council. He had a considerable share in the discovery of the use of chloroform as an anaesthetic, and was a sound chemist. He contributed several papers to our Journal and Proceedings, chiefly connected with the effective filtration of the Calcutta Water Supply. (*Proc. As. Soc. Beng.*, 1890, p. 42).

"Mention may appropriately be here recorded of David Waldie, founder of the chemical firm of David Waldie and Co., who established his first chemical works in the early part of last century at Alum Bazar, an adjacent village. . . . It is not generally known that

came to know that besides Waldie's there were three or four other sulphuric acid factories round about Calcutta owned by Kartic Chandra Singh, Madhabchandra Datta and others and I inspected them one after the other. The output of these latter factories would excite pity or derision among those who are accustomed to compare the statistics of consumption of sulphuric acid in Europe or America. On an average each of these manufactured no more than 10 cwts. per day. From the sulphuric acid again the other two important mineral acids, namely, nitric and hydrochloric, were made, these being distilled in *kalsis* (country-made earthenware jars). The primitive and wasteful methods of manufacture made me almost sick—they were paying simply because mineral acids being dangerous articles could only be imported as deck cargoes and the transport charges were almost prohibitive. The few jars of sulphuric acid I required were supplied by Waldie & Co., but a strange unforeseen occurrence imparted a fresh stimulus to my activities.

One Yadava Chandra Mitra, a co-villager of mine, had an extensive practice as a mukhtear (lower grade Attorney-at-Law) at the Alipore Criminal Court. He had been persuaded to buy a small sulphuric acid works of the description given above, designed, constructed and managed as a going concern by one Asgar Mondol. It was located at Sodepur some three miles south of Tollygunge in the midst of clumps of bamboo. Mitra invited me to visit his "Works" and hinted that my chemical knowledge might be turned to good account in improving the method of manufacture. I took care to be accompanied by the late Chandrabhusan Bhaduri, our demons-

David Waldie practised research in anaesthetics in his laboratory at Alum Bazar in the direction of chloroform at the same time as Professor Simpson of Edinburgh. The two exchanged correspondence on the subject, and a brother of Waldie's at home meditated a claim for his brother to a share of the credit in the ultimate discovery; but David was averse to pursue the matter". D. R. Wallace : *The Romance of Jute*, pp. 16-17.

trator, who was of a mechanical turn of mind and who had an instinctive insight into problems involving chemical engineering. The late Kulabhusan Bhaduri, younger brother of Chandrabhusan, who was a gold medallist and M.A. in Chemistry, was also one of the party.

Though I am writing my impressions after an interval of thirty-seven years, the excursion we made direct from the college on a Saturday afternoon comes vividly to mind. The acid factory consisted of only two small lead chambers—10 ft. by 10 ft. by 7 ft.—each without any arrangement for condensing nitrous fumes. It goes without saying that such a thing would not admit of the installation of a Glover's and a Gay-Lussac's tower, nor had the illiterate constructor any idea of such improvements. We made a close inspection of the "Works" and began to think of improving upon the crude method followed. My visits to this and the other local small acid works produced a deep impression on me. I was even stung with reproach and remorse, if I may so describe it. If one studies the history of the progress of technical arts and scientific inventions in Europe he will find solitary individuals working at a disadvantage and labouring under immense initial difficulties giving to the world the results of their indefatigable zeal and devotion, which have revolutionised the industrial world. They were almost invariably innocent of high class education. A Le-Blanc dies in poverty in a hospital in a foreign land and yet founds the modern alkali manufacture—James Watt, Stephenson, Arkwright, Hargreaves, Bernard Palissy and others were all of humble origin and yet, struggling against odds and surmounting almost insuperable obstacles, at last came out victorious. As we find from Smiles' *Lives of Engineers*, very few of them came of well-to-do families; most of them sprang from the ranks. John Metcalfe the road-maker, the son of a poor working man was struck blind when only six years old. Telford, the builder of the Menai Bridge, became an orphan when barely one year old and his widowed

mother "had a long and hard struggle with the world before her."³

I next experimented upon *sajimati* (the natron or trona of Egypt), which had been in use in Upper India from time immemorial as washing soda and tried to prepare from it fine carbonate of soda. I found, however, that it did not pay, as much purer and cheaper soda was already in the market, manufactured by Brunner Mond & Co., and soon I came to learn from the *Chemist and Druggist* that this firm had even then practically monopolised the market of the whole of Asia including China and Japan.

Phosphate of soda and "super phosphate of lime" now claimed my attention. Why should these articles be imported, when, at the same time, the important raw-material, the bones of cattle, are exported in extensive quantities? For my immediate purpose I required barely 10 to 15 maunds of bone-ash. I discovered that the raw bones were regularly carted away by contractors from several butchers' stalls within almost

³ One would scarcely have expected to find the birth-place of the builder of the Menai Bridge and other great national works in so obscure a corner of the kingdom. Possibly it may already have struck the reader with surprise, that not only were all the early engineers self-taught in their profession, but they were brought up mostly in remote country places far from the active life of great towns and cities. But genius is of no locality, and springs alike from the farmhouse, the peasant's hut, or the herd's shieling. Strange, indeed, it is that the men who have built our bridges, docks, lighthouses, canals, and railways, should nearly all have been country-bred boys: Edwards and Brindley, the sons of small farmers; Smeaton, brought up in his father's country house at Austhorpe; Rennie, the son of a farmer and freeholder; and Stephenson, reared in a colliery village, an engine-tenter's son. But Telford, even more than any of these, was a purely country-bred boy, and was born and brought up in a valley so secluded that it could not even boast of a cluster of houses of the dimensions of a village".

"He (Telford) almost always had some book with him, which he would snatch a few minutes to read in the intervals of his work; and on winter evenings he occupied his spare time in poring over such volumes as came in his way, usually with no better light than the cottage fire."—Smiles: "*Lives of Engineers*", p. 106 and p. 115.

a stone's throw of my residence, as Raja Bazar is tenanted by up-country uneducated Moslems, with whom a cheap inferior quality of beef is an article of diet. Several bags of raw bones were procured and left to dry on the roof of my house. It was winter season, when there is unbroken fine weather and sunshine in lower Bengal, but as ill-luck would have it, the January of that year was unusually wet and it rained almost incessantly for a fortnight with the result that the bits of flesh adhering to the bones began to rot giving out a disgusting stench, while swarms of thread-like maggots and worms appeared. Flights of crows now began to invade the house and enjoy a rich repast of these delicacies and fly around and scatter them among the congested dwellings of my friendly neighbours—all orthodox Hindus. They implored me to remove the nuisance and even dropped a gentle hint that unless immediate steps were taken, they would be under the painful necessity of invoking the help of the Corporation Health Officer. I was thus called upon to get rid of the unwelcome stuff at a moment's notice. Fortunately for me, a nitric acid distiller, whose acquaintance I had made during my trial experiments in the chemical line, realising my difficult position, came to my rescue. He had rented a plot of land at Maniktola near Muraripukur destined to be the scene of the famous bomb manufactory of the "Partition of Bengal" anarchists' days and suggested that the bones might be carted away there; this was accordingly done and they were piled up as in a brick-kiln, and set fire to late in the evening. At midnight the entire mass was ablaze and the policeman of the beat ran to the spot and suspecting some foul play exclaimed ईका कालास जनादाई— a corpse is being cremated (in the wake of a murder). In order to disabuse him of this notion a pole was thrust into the burning pile, when clusters of loose bones came out. The policeman was convinced of the *bonâ fide* of the transaction and went his way. The bone-ash was now turned to good account. It was treated with sulphuric acid and converted into the super phosphate of lime, which on neutralisation with

soda, gave phosphate of soda solution. The filtrate on concentration was allowed to evaporate in basins, yielding lumps of phosphate of soda crystals.

Here I pause for a while to draw attention to my way of lecturing to students. I used to place on the table samples of burntbones, which had now nothing to do with the sources they came from ; they might have been derived from the sacred cow, or the horse or the human skull. The burnt bone was almost a pure chemical compound, absolutely free from organic impurities—being to the chemists, *phosphate of calcium* and in the powdered form it is prescribed as a nerve tonic. I would often put a bit of the burnt bone into my mouth and chew it and even swallow it wholesale and invite my pupils to do the same. Some of them would readily come forward ; but others hesitated and could not shake off their orthodox notions. Only the other day, a late pupil of mine, who had a distinguished academic career, and who is now an ornament of the Marwari community and who cuts a prominent figure as a lawyer, a businessman, an economist and a politician, humorously reminded me of this incident of his college career.

Having solved the problem of locally manufacturing on a large scale some of the chemicals, which hitherto used to be imported, I took to preparations of the British Pharmacopœia. I was relieved to find that *Syrup Ferri Iodidi*, *Liquor Arsenicalis*, *Liquor Bismuth*, *Spiritus Ætheris Nitrosi* and several tinctures did not present much difficulty to a trained chemist. I also undertook preparation of ether ; but a terrible explosion, which shattered the big glass retort to atoms and might have ended disastrously, warned me off. The crude saltpetre of the market also could be easily purified and made into *Potas Nitras B. P.*

Secondhand bottles and glazed jars—the empties—could be procured in any number from the *bikriwallas*⁴ of Bowbazar Street and I began a regular inspection of their depots. I was

⁴ Dealers in old jars, bottles etc. They remind one of Dickens' *Old Curiosity Shop*.

satisfied that local supply would be more than enough for my present purpose.

These preliminaries being settled the starting of a regular pharmaceutical works now took firm hold on my imagination. The christening of my *bantling* was racking my brains for some time and after mature deliberation I hit upon the name the firm now bears ; it is rather longish but my business must represent both the chemical and pharmaceutical side and time has proved its appropriateness, at any rate no objection has been raised against it.

And now I seriously thought of pushing my preparations in the market. I had already taken care to train a *dalal* (lit. a broker) for purchasing raw-materials and selling the finished products. A youngman, who had served for some time as a compounder under my elder brother—a medical practitioner—and who was now sitting idle was sent for from my native village. He was familiar with the names of the ordinary drugs used in a dispensary and I broached to him my plan of manufacturing them locally. He had read up to the primary standard, and had only a knowledge of the 3 R's and a smattering of English ; he suited my purpose well. In those days "matriculation" boys were not as cheap and plentiful as blackberries. Boys, who have read up to the highest forms of the H. E. School or who have the misfortune of crossing the threshold of a college, imbibe queer notions of dignity and are often a bit conceited in this caste-ridden land of ours. The youth of my choice proved equal to the occasion. He came to live with me and demanded only a small remuneration. I promised him, however, a commission on sales. Being young, he was not a stranger to idealism or enthusiasm and he caught the contagion from me. One day on watching how rejected scrap iron treated with sulphuric acid yielded in due course beautiful crystals of green vitriol (Ferri Sulph. B. P.) he burst forth into exclamation "Oh God! how marvellous is the science of Chemistry". When again he saw that the offensive smelling, decomposing raw-bone was the parent of the Sodii

Phosp. B. P., his awe and wonder knew no bounds. My *dalal* now began to move about the drug-market with samples of preparations bottled, labelled and packed on the European model.

The local dealers in the drugs are as a rule innocent of rudimentary knowledge of Chemistry. They can at best cast accounts and calculate the profit and loss of a transaction. They expressed their admiration for the articles offered but shook their head saying: "*Bilati* (imported) drugs from firms of established reputation command a ready sale, whereas *Deshi* (indigenous) drugs would be refused by our customers". We had thus an up-hill fight from the beginning.

I had progressed thus far when an event occurred which not only gave a vigorous impetus to my exertions but proved to be of far-reaching consequences in the history of our business. One day an old fellow-student of mine, who was full of patriotic impulses and who had realised that unless our youngfolk had new careers opened out to them, middle-class unemployment would soon spell our economic ruin and bring on national disaster, hearing of my endeavours in the new direction, called on me. This was no other than Amulyacharan Bose, who was now a fairly successful medical practitioner and who was henceforth destined to play an important part in the history of the newly started business. I at once took him to the out-house, meant for the kitchen, wherein basins and improvised vats containing samples of *Ferri Sulph.*, *Sodii Phosph.* and some other chemicals used in the pharmacy were crystallising and I also broached to him my scheme of establishing a chemical and pharmaceutical works and pointed out to him its feasibility. Amulyacharan was an enthusiast and he simply leaped with joy at the very mention of it and threw himself heart and soul into my project. His co-operation proved to be invaluable as apart from the pecuniary contribution brought in, he began to enlist the sympathy of the medical profession in favour of our preparations.

Since the acid factory at Sodepore could not be profitably

managed by Yadava Mitra, who had to depend entirely upon an ill-paid agent, who knew little and understood less about the affair, Mitra offered it to me at a price of Rs. 1,000/-. But how to find the money? After three years' service I had in the bank to my credit about Rs. 800/-, which was soon exhausted in the preliminary experiments. Mitra, who knew my financial position well, agreed to part with the factory if I signed a hand-note for the above amount, which I readily did. I was to earn in a month or two Rs. 600/- or so as examiner's fee and the balance I would pay off in instalments, so I closed with the offer and was at once put in possession of the acid 'works'. But a fresh difficulty arose. How to manage to conduct operations at a place not easily accessible and at a distance of six miles from my headquarters. I consulted Chandrabhusan Bhaduri, who was also a bit of an enthusiast in such matters. He fell in with my ideas. The summer-vacation of 1893 was about to commence and May and June were holiday months. He and his brother Kulabhusan and a relation of theirs withdrew to this out-of-the-way place. The "quarters" in which they lodged was a mud hovel. There was no market place near at hand ; no fish or vegetable were available ; they therefore provided themselves with a few bags of rice and potatoes and quite enjoyed their picnics in the midst of the romantic bamboo groves, and what is still more important they studied the technique of the acid chambers and found to their regret how the crude process employed led to the waste of the raw materials. Such a miniature factory might be paying to a small capitalist who himself managed it and looked after every detail ; but a trained chemist had scarcely any occupation here as everything was conducted by the rule-of-thumb method.

Messrs. Bhaduri had to leave the place as soon as the college session commenced in the beginning of July but they drew up a report suggesting that an up-to-date acid works should be constructed. But the time was not yet ripe. I could not command the requisite capital and my spare time

was fully occupied with the pharmaceutical side of the business. I had to wait for full ten years before the scheme of starting the chemical and pharmaceutical works on a bigger scale, with an "acid" department as an adjunct, could come to maturity.

In the meanwhile I plunged headlong into the intricacies of pharmaceutical preparations, gathering much help and many hints from the *Pharmaceutical Journal* and the *Chemist and Druggist* and Squire's *Companion to British Pharmacopæia*, and Cooley's *Cyclopædia of Recipes*, etc. I was thrown upon my own resources and had to solve problems as best I could. One instance might suffice. The syrup of iodide of iron (Syr. Ferri. Iod. B.P.) which I made used to turn slightly brown on keeping ; this was due to the ferrous iron absorbing oxygen of the air and becoming very slightly oxidised to the ferric state, as also the iodide liberating traces of iodine, though in minute quantities. I was in a fix. The imported drug kept its light green colour intact for a considerable time. One day while turning over the pages of one of the journals referred to above, I came across just the hint I wanted. The minimum quantity of hypophosphorous acid added to the prepared solution of ferrous iodide would act as an excellent preservative and it would remain light green for any length of time. It was in this manner that I gained experience in the pharmaceutical line and solved difficulties as they cropped up.

Our preparations now began to push their way onwards and find at any rate a back seat in the shelves of the local druggists ; some of them, who had assumed almost a hostile attitude when the first samples were offered to them, and heaped ridicule upon our efforts, now began to veer round and even become true converts, nay, express admiration for the articles offered in the market ; but all the same they did not hesitate to throw the blame on their customers who had no faith in the *deshi* (indigenous) articles. In the meantime Amulyacharan began a vigorous canvassing among the medical profes-

sion. There is perhaps some point in the saying: "set a thief to catch a thief." The late Radha Gobinda Kar, who along with Amulyacharan and others will be always entitled to be regarded as the original founders of the Carmichael Medical College, was easily won over. His other comrades in the profession, who were just coming to the fore, e.g., Nilratan Sarkar, Suresh Prasad Sarvadhikary and a host of others, who were all inspired by patriotic impulse, began slowly but steadily to prescribe our Aitken's *Tonic Syrup*, *Syrup of Hypophosphite of Lime*, *Tonic Glycerophosphate*, Parrish's *Chemical Food* etc.

Both Amulyacharan and Radha Gobinda had an instinctive liking for and faith in the therapeutic properties of the indigenous drugs used by our *Kavirajas* (Ayurvedic Physicians) from time immemorial. I began with pharmaceutical preparations named above which were in vogue ; but Amulyacharan gave a new direction to our business. He consulted several *Kavirajas* and collected from them formulæ and recipes for the Ayurvedic preparations, e.g. extract of *Kalmegh* (*Andrographis paniculata*) ; extract of *Kurchi* (*Holarrhena antidysenterica*) ; syrup of *Vasaka* (*Adhatoda Vasica*) ; Aqua *Ptychotis* (*Ajowan* water) and placed them in my hands. Over and above that he began a regular campaign in favour of these and impressed upon the profession the fact that the efficacy of these drugs had been proved beyond doubt by their universal use in the households of Bengal. All that was needed was that their active principles should be extracted according to scientific up-to-date methods and that they should receive the *imprimatur* of the practitioners. Amulyacharan himself took the lead in boldly using these in his prescriptions. Slowly but surely they began to creep into favour and well they might. It was the universal practice in those days to prescribe syrup of tolu as an expectorant ; but it was found that syrup of *Vasaka* acted more efficaciously. Our newly introduced indigenous drug preparations thus began to make headway on their own merits.

It should be noted here that as early as 1841 O'Shaughnessy had recommended the use of indigenous drugs and later on

Kanai Lal Dey (*Indigenous Drugs of India*), Modern Sheriff and Udoychand Dutt (*Materia Medica of the Hindus, 1875*) had pleaded hard for the substitution of some of these for the official drugs in the British Pharmacopœia.⁵ More than half-a-century had to elapse before their recommendations could obtain a hearing. At the Indian Medical Congress held in Calcutta in 1898 we had a stall in which we exhibited preparations of Indian drugs and these attracted considerable attention of the medical men gathered from different parts of India. A strong representation was made by the Council of the Congress at the instance, I believe, of Kanai Lal Dey, who was then almost on the verge of his grave, urging the official recognition of some of these drugs and the British Pharmacopœia authorities were at last prevailed upon to find a back seat for them in the "Addendum".

We were now in a position to feel our way in the market. Wholesale dealers began to make enquiries about the supply of this drug or that. One serious obstacle in the way of pushing "home made" articles lies in the fact that the drug-trade of Calcutta had been mainly captured by illiterate *banias* and up-country Moslems—the *Delhiwallas* etc.—who have not got a spark of patriotism in them and who do not hesitate to take unfair advantage of local producers. *Deshi Cheez* (home made articles) were not in request, therefore unless you lowered the price, they would not push them and even then one could not demand cash price, but the payment must be put off indefinitely. Fortunately, there were one or two leading Firms, conducted by Bengalis, which from the very start gave us warm support. One day we had occasion to purchase raw-materials such as

⁵ *The Bengal Dispensatory and Pharmacopœia* by W. B. O'Shaughnessy, M.D., Professor of Chemistry and Materia Medica in the Medical College, Calcutta (1841). This pioneer work gives an account of a good many indigenous drugs and their medicinal properties, e.g., *Ananthmul* (*Hemidesmus Indicus*) as a substitute for sarsaparilla, *gulanchar* (*Menispermum Cordifolium*), *gunjah* (*Cannabis Indica*), *akund* (*Asclepias gigantea*), *chirata* (*Gentiana Ch.*) etc.

iodine, balsam of tolu, radix belladonnæ, folia hyoscyami, etc., in fairly large quantities. The late Bhutnath Paul of Messrs. Butto Kristo Paul & Co., the leading house in the drug line, expressed surprise at the unusually large quantity of iodine in our invoice amounting I think to 7 pounds. An ordinary dispensary in Calcutta or in the moffusil would not consume more than one pound of iodine in a month or sometimes in a year. "What are you going to do with so much iodine included in a single invoice unless it be meant for a drugstore?" When it was explained to him that the iodine would be made into *Syrup Ferri Iodidi* his curiosity was further excited. He had already been no doubt approached for orders but he had not hitherto taken our new venture in a serious light as he was naturally not confident of its success. Here was an eye-opener to him. Seven pounds of iodine and similar items of tolu etc., all to be converted into British Pharmacopœia preparations! Paul at once placed orders with us for one hundredweight of *Syrup Ferri Iodidi* and if I remember aright for another hundredweight of *Ferri Sulph*.⁶

When this order was placed in my hands my joy knew no bounds. Every afternoon on returning from college (about 4-30 p.m.) I used to go through the previous day's orders and to see that they were executed promptly. The migration from my college laboratory to the pharmacy laboratory was to me a recreation and a change of occupation. I would at once throw myself into my new "job" and work at a stretch from 4-30 p.m. to 7 p.m. and "clear the file." When work is coupled with a keen sense of enjoyment it does not tell upon your health; the very idea of locally manufacturing pharmaceutical preparations, which hitherto had to be imported, acted like a tonic. Preparations like *Syrup Ferri Iodidi*, *Spirit of Nitric Ether*, *Tincture of Nux Vomica* etc., were really laboratory preparations, as they could only be undertaken by a trained

⁶ Orders in the drug-market are in terms of hundredweights or its submultiples: 56 lbs., or 28 lbs., or 7 lbs.

chemist and each sample must be of guaranteed strength ; in other words they involved analytical skill in assaying.

About this time a terrible catastrophe befell me. Amulya's brother-in-law (sister's husband) Satischandra Sinha had taken his M.A. degree in Chemistry and had completed his attendance at law-lectures. Under ordinary circumstances after passing his law examination he would have commenced his career as a legal practitioner. Satis's imagination caught fire from Amulya and he made up his mind to turn his chemical knowledge to account and therefore joined our infant concern. It required no small degree of conviction and moral courage to throw in his lot with a venture that was not only in its infancy but scarcely held out any prospects in the near future ; one had to be prepared to work hard and expect no remuneration for some time to come. Young Satis was a valuable acquisition to me. He also brought in some capital with him. I was hitherto single-handed as far as chemical operations were concerned and the strain was proving too much for me. Moreover, all my spare time, which I used to devote to study, was snatched away. I now initiated Satis into the mysteries of the new processes which I had worked out and he being a trained chemist could easily master them. We toiled in hearty co-operation for a year and a half and a demand for a good many of our preparations had been created in the market. Things were getting on merrily and prosperously ; a certain section of the medical profession made it a point to include our preparations in their prescriptions wherever possible.

Providence had, however, ordained that I should pass through an awful ordeal. One evening I had gone out for my usual constitutional walk. On returning home about half past eight I was stunned to hear that Satis was no more. He had been accidentally poisoned by hydrocyanic acid. I was scarcely in my senses when I ran to the Medical College Hospital, where I saw the dead body of Satis on a stretcher. I stood, motionless and aghast, and it was some time before I could come to myself and realise the situation. Here was a youngman

with a career before him full of promise cut off in the very threshold, leaving behind aged parents and a disconsolate young widow. The deep anguish of mind of Amulya and myself cannot be described. We felt as if we were personally responsible for the loss of a valuable life. Thirty-two years have elapsed since the tragic incident ; but as I write these lines, a shudder, like an electric shock, passes through my frame.

For a time it seemed as if our cherished hopes had been dashed to the ground. After the first outburst of grief was over, Amulya and myself pondered over the situation. "The Lord hath given and the Lord hath taken away, blessed be the name of the Lord",—it was in this spirit that I sought consolation. There was no retracing our steps. I had again to take all the responsible duties on my shoulders. With a grim, dogged determination I faced the difficulties.

Fortunately for me diversified work has been my recreation, the chief solace of my life. Orders must be executed. In fact, a big order always acted as a stimulant ; and in those days I could labour prodigiously without my health being impaired. A couple of hours in the morning, I have throughout my career religiously set apart for my studies—chemical and literary. If by mischance my apportioned time was in any way interfered with, I would almost exclaim with Titus, "A day has been lost!" On sundays and holidays I used to work, some 10 to 12 hours, almost at a stretch with an hour's interval for bath and meals. The labour was more or less mechanical and of a routine character and did not tax my brain. I would sometimes rest on my arm-chair and under my direction and supervision, one or two compounders would weigh out various ingredients and make them up into the requisite preparations of which I would now and then take samples and after analysis standardise them. By following the suggestions of pharmacists and by going carefully through vast literature on the subject I got ready in my laboratory a good number of concentrated liquors of definite strengths, as also liquors for

syrups of various descriptions. If it was necessary to make, say, one hundred pounds of *Aitken's Syrup*, all that I had to do was to draw off a measured volume of the liquor and mix it up with the required volume of the syrup and in this manner in almost five minutes' time I could serve the order.

There is a decided advantage when a chemist who has acquired a fair mastery over his subject takes up a problem involving technical and scientific knowledge. He is always resourceful and readily tackles any difficulties as they come. He is never at his wit's end. He can hit off new methods and processes which are valuable assets to him in the shape of trade-secrets. I laboured, however, under one serious handicap. The capital we had hitherto invested barely exceeded rupees three thousand. I could hardly save anything from my own salary. Amulya was getting into good practice ; but he was the chief bread-winner of a big joint-stock Hindu family and he was in addition very charitably disposed. He could not save much. A portion of the capital we had invested was necessarily tied up in apparatus, jars, bottles and various raw materials. In the meanwhile the sulphuric acid factory at Sodepore was in a bad way ; its daily output did not exceed 10 mds. (820 lbs. of sp. gr., 1.720) and it could not be kept on as a paying concern at such a distance from Calcutta.

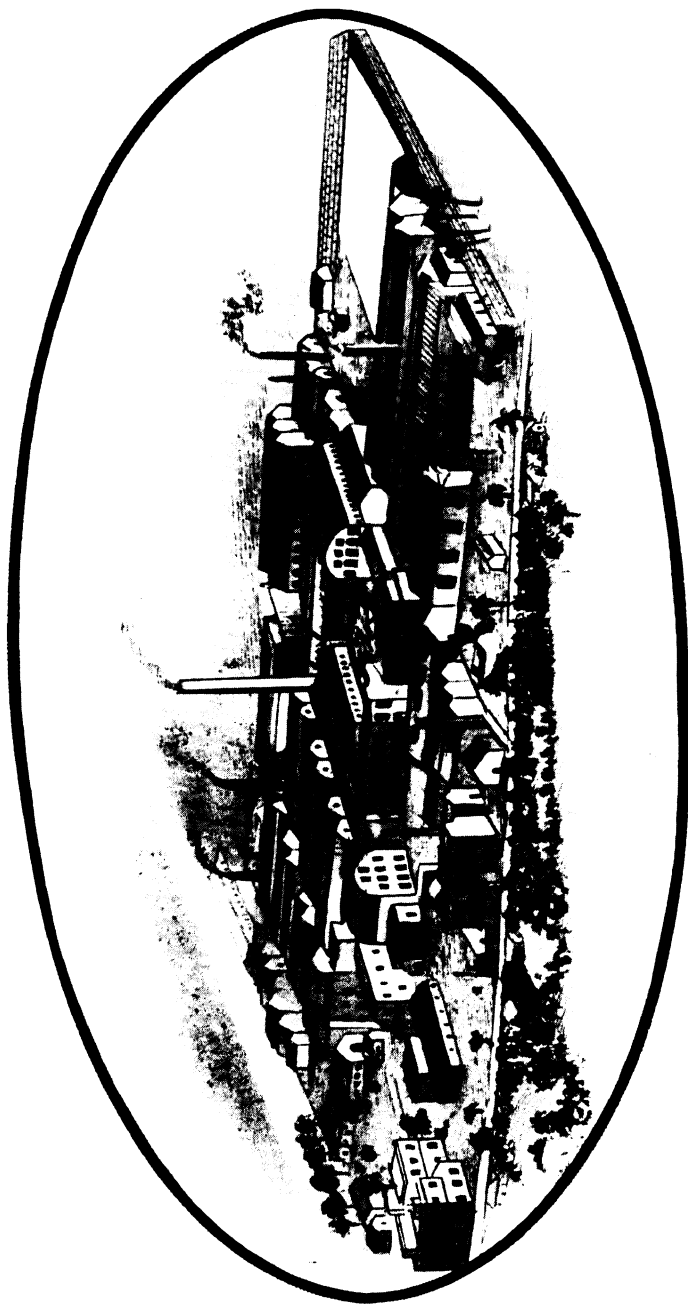
In the beginning of the summer vacation of 1894, I received news of the death of my father and I hurried home with my eldest brother. What remained of our landed property was heavily mortgaged. We came to amicable terms with our creditors including the Khulna Loan office ; made arrangements for the payment of a portion of the debt by easy instalments and cleared off the balance by selling some estates. The affairs being completed within a week's time, I returned to Calcutta and took my quarters at the acid factory during the remaining six weeks of the summer holidays so that I might see with my own eyes the state of things there. Everyday, however, I had to undertake a tedious journey to Calcutta and stay at the head office for 3 to 4 hours in order to supervise the preparations. At Sodepur

I used to utilise my leisure hours by going through my favourite book—Kopp's *Geschichte der Chemie* (History of Chemistry). When the vacation term ended, I had to remove to Calcutta. It did not take me long to arrive at the conclusion that an acid factory on such a miniature scale could only be conducted at a loss and I had most reluctantly to scrap it. The second-hand lead sheets fetched only 3 or 4 hundred rupees. In this venture or undertaking some loss was necessarily incurred, but the experience thus gained proved to be a valuable asset, which was turned to good account several years later.

At this time another misfortune overtook me and our young venture. Amulya had in his professional capacity treated a patient, who had contracted bubonic plague of the pneumatic type. This form of the virulent disease is highly infectious and he himself caught it. One Sunday afternoon (Sep. 4, 1898) I was going as usual through the list of preparations and finishing with syrup of hypophosphite of lime, when I came to learn that poor Amulya was no more and that his dead body had been removed to the Nimtola Ghat cremation ground. I immediately left the preparation, took a hackney carriage and drove to the spot to have a last look at it. After staying there a few minutes and subduing my grief, I ran back to my place and finished the preparation. After Amulya's death I was left in sole charge of the works. The story need not be further continued. It is enough to state here that the "works" was five years later converted into a limited liability company and in order that its expansive operations might be conducted on a much bigger scale, a plot of land measuring about 13 acres was secured in the suburbs, three miles off the main office.

Dr. Travers, first Director of Indian Institute of Science (Bangalore), who had occasion to visit the Chemical Works during its construction (1904—7) in the course of a report to the Calcutta University observed as follows :

"The construction and management of the works is the work of the past students from the chemistry department of the Presidency College. . . . The design and construction of the sulphuric acid plant and of the plant required for the preparation of drugs and other



AIRPLANE VIEW OF THE BENGAL CHEMICAL AND PHARMACEUTICAL WORKS.

products involved a large amount of research work of the kind which is likely to be of the greatest service to this country and does the greatest credit to those concerned".

Mr. (now Sir John) Cumming observes :

"The Bengal Chemical & Pharmaceutical Works, Ltd., is one of the most go-ahead young enterprises in Bengal. Dr. Prafulla Chandra Ray, D.Sc., F.C.S., started it as a small private concern in Upper Circular Road about 15 years ago and made drugs from indigenous materials. About six years ago it was made into a limited liability company, with a capital of two lakhs. Many of the leading chemists in Calcutta are share-holders. It has now a well-thought out and well-managed factory with about 70 workmen, at 90, Maniktolla Main Road. Babu Rajshekhar Bose the Manager, is an M.A. in Chemistry. The variety of manufactures of laboratory apparatus, which requires skilled craftsmen in wood and metal, has been taken up. The latest development is in perfumes. The enterprise shows signs of resourcefulness and business capacity, which should be an object lesson to capitalists of this province".—*Review of the Industrial Position and Prospects in Bengal in 1908*, pp. 30-31.

The new extension of the Chemical Works at Panihati (12 miles south of Calcutta) covers 50 additional acres. The sulphuric acid plant with Glover's and Gay-Lussac's tower installed here is perhaps the biggest of its kind in India. The Firm at present employs 2000 hands and its net assets come upto half-a-crore of rupees.

CHAPTER VIII

NEW CHEMICAL LABORATORY—MERCUROUS NITRITE— HISTORY OF HINDU CHEMISTRY

The chemical department of the Presidency College, located in the old one-story building, was now proving quite inadequate to meet the increased demands made upon it. Although practical work for the F.A. in Chemistry was not yet compulsory, the number of students choosing this subject for the B.A. and M.A., courses was increasing year after year. There were no flues for drawing off the noxious gases and the ventilating arrangements were most rudimentary ; in fact while the practical classes were in full swing, the atmosphere, especially in the rainy season, thickly laden with fumes, became suffocating and highly injurious to health.

On one such occasion I invited Principal Tawney to go the round of the laboratory and breathe the air for a few minutes. Tawney, who, I believe, suffered constitutionally from weak lungs, after being in for a couple of minutes became terribly agitated and rushed out of the room and fulminated in a letter to the Director of Public Instruction against the state of things. He pointed out that if the Health Officer would come to know of it, he would be justified in prosecuting the authorities of the college for endangering the health of the students.

Pedler was also fully persuaded that a new laboratory should be constructed and fitted up with up-to-date appliances. He by slow degrees worked up Croft and brought him round to his views and also moved the Bengal Government to this effect. One fine morning in January 1892, Croft and Sir Charles Elliott visited the chemical department and discussed with us the preliminaries about the new building to be erected. We soon learned to our delight that Government had

sanctioned and approved the plan submitted to it. I had a copy of the reprint of the description of the Edinburgh University's new chemical laboratory, containing drawings and diagrams illustrating the students' working benches, the re-agent shelves, the ventilating flues, etc., and some of these were incorporated into our new plan. Pedler had also collected some plans of the German laboratories. Chandra-bhusan Bhaduri materially helped Pedler in drawing up the plan of the present laboratory.

We removed to the new buildings at the beginning of the session, July 1894. It soon began to attract visitors from different parts of India and by a curious coincidence my renewed and redoubled activity in the field of chemical researches dates from this eventful year. I had taken up the analysis of certain rare Indian minerals, in the expectation that one or two new elements might turn up and thus fill up the gap in Mendeleeff's Periodic System: Mr. (now Sir Thomas) Holland, then a junior officer in the Geological Survey of India and also a lecturer in Geology, Presidency College, kindly undertook to supply me with specimens of such minerals. I went through my noviciate in this branch, following Crookes' *Select Methods in Chemical Analysis*, at that time a standard work on the subject, and made some progress when my chemical career underwent an unexpected turn.¹

The discovery of mercurous nitrite opened a new chapter in my life. The circumstances which led to it are thus described in the opening paragraph of the first communication on the subject. "Having recently had occasion to prepare mercurous nitrate in quantity by the action of dilute acid in the cold on mercury, I was rather struck by the appearance of a yellow crystalline deposit. At first sight it was taken to be a basic salt, but the formation of such a salt in a strongly acid solution was contrary to ordinary experience.

¹ *Mem. Geolog. Surv. Ind.*, vol. 28 (1900), p. 142.

A preliminary test proved it, however, to be at once a mercurous salt as well as a nitrite. The interesting compound promised thus amply to repay an investigation." *Journ. As. Soc. (Bengal)*, 1896.

It is not necessary to give here anything like a detailed enumeration of the investigations on mercurous nitrite and its numerous derivatives as also on the nitrites in general, as they form the subject-matter of some one hundred and more communications to chemical journals. As one new compound followed in the wake of another, I took up their examination with unabated zeal. In short, I could fully enter into the feelings of one of the illustrious makers of modern chemistry, the immortal Scheele:—"There is no delight like that which springs from a discovery ; it is a joy that gladdens the heart." To plough the new field thus opened up and to explore the untrodden regions was a constant source of thrilling excitement. Hunters know well that it is in the pursuit of game and not in the actual securing of it that the keen enjoyment lies ; the appreciative and congratulatory letters from eminent chemists like Roscoe, Divers, Berthelot, Victor Meyer, Volhard, and others not only filled me with inspiration but stimulated me to further activity.²

At this period I also took care to divide my time equally between the study and the laboratory ; a portion of my time being also detailed off for the preparations of the Bengal Chemi-

² Cf. "The Journal of the Asiatic Society of Bengal can scarcely be said to have a place in our chemical libraries ; the current number, however, contains a paper by Dr. P. C. Rây, of the Presidency College, Calcutta, on mercurous nitrite, that is worthy of note. During a preparation of mercurous nitrate by the action of dilute nitric acid in the cold on mercury, yellow crystals were deposited which upon examination, proved to be mercurous nitrite." *Nature*, (1896).

"The way in which you have gradually made yourself 'master of nitrites' is very interesting and the fact that you have established that as a class they are far from being the unstable bodies, chemists had supposed, is an important addition to our knowledge". Prof. Armstrong, *Presidency College Magazine*, 1914-15, p. 155.

cal Works. A victim of insomnia, I had to practice rigid abstinence as regards my appetite for reading. For the last fortyfive years or more I have not* been able to do any literary or intellectual work by candle light ; every such effort carried on after even-tide would involve serious consequences in the shape of keeping me awake almost the whole night. I have all along followed the maxim : *Early to bed and early to rise* and have found by experience that an hour spent over books in the morning is equivalent to two or more in the evening or at night. Moreover, a student who has to spend the best hours of the day in the close and stuffy atmosphere of the laboratory would conserve his health best if he were to spend religiously a couple of hours in the open air. My remarks, however, must be qualified when applied to cold climates. In Edinburgh or London in the winter season I could read light literature with impunity for an hour or two in the evenings.

At this time I was also indulging my favourite hobby,—researches into the History of Chemistry, including lives of the makers of our science. Kopp's *Geschichte* was a hard nut to crack ; its long-winded and involved sentences were by no means easy reading, but so great was the interest created day by day that I waded through it. I ungrudgingly devoted my precious morning hours to mastering its contents. I also knew full well that our *Kavirajas* (Ayurvedic physicians) used many metallic preparations of which an account is given in Udoychand Dutt's *Materia Medica of the Hindus*. My curiosity prompted me to read some of the original Sanskrit works quoted in this pioneer work. In the Presidency College library I came across Berthelot's *L' Alchimistes Grecs*, which further stimulated my inquisitiveness. About this time I was brought into correspondence with the great French chemist himself. I had occasion to write to him to say that he was evidently not aware that in ancient India also alchemy was zealously pursued and that there are several treatises in Sanskrit on the subject. The reply which my letter elicited is characteristic of the man and

I cannot do better than reproduce the facsimile of the original. The English translation is given in the foot-note.³

³ Sir,

I have received your chemical researches which are highly interesting and I have seen specially with pleasure how science with its universal and impersonal character is equally cultivated by all the civilised peoples of Asia as well as of Europe and America.

I ask your permission to invite your attention on certain information, you have given relative to the alchemy of India. Perhaps you are not aware of the works in 3 vols. that I have published on the History of Chemistry of the Middle Ages.

1. 1st Vol. regarding the transmission of Asiatic Sciences.
2. 2nd Vol. regarding Syrian Alchemy and
3. 3rd Vol. regarding Arabian Alchemy.

In the latter are to be found some indications and quotations relating to Indian Alchemy. They are drawn principally from a Treatise of Ostanès which I refer to in my third vol., pp. 117-127. There are certain references in the Book of Crate's, p. 63 etc. If you have that work at Calcutta it may interest you.

I also published about 2 years ago in the *Journal of the Savants* an article on the Chemical Science of China according to the new translations.

I am led to believe that the Indian and Chinese alchemy has come from Greece by the intermediaries of the Syrian Nestorians of the 6th and 8th century of our era.

But I am very anxious to know the Indian Treatises of the 13th century which you have mentioned. Have they been printed? Is there any translation or analysis in English or in any European language? In that case I shall be highly obliged to you if you can inform me exactly or if you can send me those works, because I believe one cannot procure them at Paris.

If it is necessary to write to the Colonial Director of London it will not be difficult for me to have the permission provided that the information is precise.

I ask you many things but it is the result of your letter by which you have roused my curiosity.

With my best regards.

(Sd.) M. BERTHELOT.

It is a pity that I did not take any care to preserve the numerous letters which I received at this period from eminent chemists. The one quoted above is in my possession only through an accident. One day in my retiring room at the Presidency College I found several scraps of paper lying scattered about, awaiting the sweeper's broom; my eye chanced upon Bertholet's letter reproduced above.

The moral effect, the letter produced on me, was profound. Here was perhaps the then foremost exponent of our science, approaching the allotted span of life, according to the Hebrew scriptures, showing youthful unbounded enthusiasm to know all about a new chapter in the history of chemistry, and I, a young man, was progressing rather slowly. I received almost an electric impulse and was stirred to fresh activity.

In response to Berthelot's fervid appeal I hastily drew up a paper based chiefly upon the introductory chapters of *Rasendrasara Samgraha* and forwarded it to him. I soon discovered by further studies that this treatise is not of much importance for a student of Hindu Chemistry. Berthelot, however, carefully went through the manuscript and elaborated upon it an article in the *Journal des Savants*,⁴ and not only sent me a few copies of its reprint, but also three monumental volumes of his encyclopædic work on Syriac, Arabic, and middle-age Alchemy referred to in his letter. I greedily devoured the contents of these, and the idea now firmly took hold of me that I must write a history of Hindu Chemistry modelled upon the exemplars before me. Another incident also acted as a stimulus. One evening while I was attending a meeting of the Asiatic Society of Bengal, my attention was directed to the current issue of the *Journal des Savants* lying on the table and almost instinctively my eyes were turned towards an article by Berthelot of which the last para runs thus.

"Cependant il serait nécessaire d'examiner certains documents qui m'ont été récemment signalés par une lettre de Rây, professeur à Presidency Collège (Calcutta). D'après ce savant, il existe des traités d'alchimie écrits en sanscrit remontant au XIII^e siècle et qui renferment des préceptes pour préparer les sulfures de mercure noir et rouge et le calomel employés comme médicaments. Ces indications s'accordent avec celles des alchimistes arabes signalées plus haut. Il est à désirer que ces traités soient soumis à une étude approfondie pour en déterminer

⁴ Matériaux pour un chapitre négligé de l'histoire de la chimie ou contributions à l'Alchimie indienne (Mémoire manuscrit de 43 pages), par Prafulla Chandra Rây, professeur à Presidency College, Calcutta". *Journal des Savants*, April, 1898.

l'origine probablement attribuable à une tradition persane ou nestorienne".—*Journal des Savants*, Oct., 1897.

A thrill as it were passed through my body. Here was I, a junior professor (or rather assistant professor) of Chemistry almost unknown to fame, and there the foremost chemist and historian of chemistry speaking of me as a *savant*. The idea soon took possession of my mind that I was destined for some higher production.⁵ I was not at all appalled by the gigantic nature of the task. I instituted a vigorous search for manuscripts bearing upon the subject and ransacked the pages of Aufrecht's *Catalogus Catalogorum*, Bhandarkar's, Rajendra Lal Mitra's, H. P. Sastri's and Burnell's Notices of Sanskrit Mss., and put myself in communication with the librarians in India and the India Office, London, where some of the manuscripts have been preserved. Pandit Navakanta Kavibhusan, who acted for four or five years as my amanuensis, was also deputed to Benares in search of old works on alchemy. Any one who has experience in collecting Mss. in India knows what ravages the white ant, the silver fish and other insects commit on them. The damp climate of Bengal is specially unfortunate in this respect. It was often necessary to collect as many as 3 or 4 Mss., of the same *Tantra* since sometimes the introductory pages were found eaten up by worms, sometimes again the concluding portion; there are also discrepancies in the readings of different Mss. In order to bring this home to the reader it is only necessary to refer to the edition of *Rasarnava* in the *Bibliotheca Indica*.⁶ The following extract from the preface to

⁵ Readers of Froude's *Life of Carlyle* will not have failed to notice that while the philosopher was almost on the brink of starvation (with £5 in his pocket to front the world with) and while publisher after publisher was rejecting his *Sartor Resartus* as sorry stuff, a letter from Goethe all at once revived his drooping spirits. The recognition of his merits by the greatest seer then living did not fail to convince him that a time would come when he would compel the world's homage.

⁶ "The *Rasarnavam* or the Ocean of Mercury and other Metals and Minerals.—Ed. by P. C. Ray and K. C. Kaviratna, pub. by the Asiatic Soc. of Bengal, 1910.

the first volume of the history represents in a nutshell my object in undertaking the task.

"Since the days of Sir W. Jones, Sanskrit literature, in almost every department, has been zealously ransacked by scholars, both European and Indian. As the results of their labours we are now in possession of ample facts and data, which enable us to form some idea of the knowledge of the Hindus of old in the fields of Philosophy and Mathematics including Astronomy, Arithmetic, Algebra, Trigonometry, and Geometry. Even Medicine has received some share of attention One branch has, however, up till this time, remained entirely neglected namely, Chemistry. Indeed, it may be assumed that on account of its complex and technical nature it has hitherto repelled investigators".

It is not necessary to give details here as any one who cares to turn over the pages of the *History of Hindu Chemistry* will have no difficulty in realising the gravity of the task undertaken ; it was however a self-imposed one and when the work itself is a source of pleasure, nay, enjoyment as I have said before, it does not tell upon the health, on the contrary, it has a bracing effect. It was a source of gratification to me that almost immediately on the appearance of the first volume it was welcomed with high encomiums both at home and abroad. Not to speak of our own journals, *The Englishman*, *The Pioneer*, *The Times of India* came out with lengthy, appreciative notices, one of which was pleased to call it a "monumental labour of love." *Knowledge*, *Nature* and the *American Chemical Journal* also reviewed it with appreciation and sobriety of judgment. Berthelot devoted 15 pages of the *Journal des Savants*, (Jan. 1903) to a critical review and thus concludes.

"C'est un chapitre intéressant ajouté à l'histoire des sciences et des l'esprit humain, chapitre particulièrement utile pour la connaissance des relations intellectuelles réciproques qui ont existé entre les civilisations orientales et occidentales."

Knowledge, March, 1903, observed :—"Professor Rây's book is an important contribution to scientific literature, and students of the history of science will be glad that such an instructive selection from the records of Hindu Chemistry is now available".

Dr. Mahendra Lal Sircar in his *Calcutta Journal of Medicine* (Vol. XXI, No. 10, Oct., 1902, p. 407) thus reviewed it :

"It is a rule with all journalists to notice only those works which are sent to them for purposes of review. If in the present instance, we have deviated from the rule it is because we have allowed our patriotism to override our editorial dignity. Authorship such as the kind we have deemed it our duty to notice, authorship in the direction of historical research as to the state of a science in ancient and mediæval India, which has made true progress only in modern times, authorship guided by a full knowledge of that science—such authorship is not only rare but so unique in our country that omission to notice it would have been a dereliction of duty".

"It is a noteworthy sign of the times that we, Indians, who have been stigmatized as lovers of hyperbole, and absolutely wanting in the historic sense, have taken to the study of History, especially of the history of our forefathers, of their civilisation, their arts and sciences. It is by the constant taking of stock that one becomes aware of one's deficiencies and the lines along which they may be made good. And history is nothing but taking stock of a nation's assets and liabilities in all the departments of worldly existence. It is, therefore, not only as a matter of duty but with sincere delight that we hail the appearance of the first volume of *A History of Hindu Chemistry* by so skilful and zealous a chemist as Prof. Prafulla Chandra Rây, D.Sc., of the Presidency College, Calcutta. For some years past he has been labouring to collect materials for his history, some of which he has presented in the volume before us".

English chemists as a class are rather indifferent to the history of chemistry and since the days of Thomson scarcely a single authoritative work on the subject has been written in English by any one of them. They have in fact contented themselves with simply translating Ladenburg's or Meyer's treatise dealing with the subject. There has been, however, all along a fair demand for my humble work in England, proving that a limited few at any rate are interested in it. The then Vice-Chancellor of the University of Durham on the occasion of conferring the Honorary degree of D.Sc. (1912) on the author took occasion to say,

"A keen and successful investigator, he has long made his mark by contributions to scientific periodicals, both English and German, but his fame chiefly rests on his monumental *History of Hindu*

Chemistry a work of which both the scientific and linguistic attainments are equally remarkable, and of which, if of any book, we may pronounce that it is definitive”.

It is gratifying to note that all along and even after the lapse of 30 years the work receives appreciative notices in the European scientific Journals ; e.g. Hermann Schelenz in his *Geschichte der Pharmazie* (1904) gives an account from the *History of Hindu Chemistry* of the methods of distillation, sublimation &c., and expresses his wonder that at so early a date (as 12th or 13th century) these processes were known in India.

Professor Alexander Baték (Bohemia) wrote (1904) :

“I am publishing in my mother language (tchèque) in short lectures the history of natural sciences and I pray you to allow me to publish also a short extract of your excellent book, *A History of Hindu Chemistry* in this collection.

Svante Arrhenius in his *Chemistry in Modern Life* (Eng. trans. by Leonard) quotes from the *Hindu Chemistry* at length and assigns to India the priority in the use of metallic, especially mercurial drugs.

The latest Review of the work appears in the Italian *Archivio di Storia della Scienza* (Archives for the History of Science). Below is appended a literal translation of portions.

“Interest in the history of science has been spreading to-day in all the civilized countries ; and although very often still it leads but to the production of works of small value,—the legion of dilettantes abounds everywhere and constitutes the noisiest gang—many others embody writings of noteworthy importance. And thus in all countries, besides the simple copyists and others inspired by stupid and senseless nationalism, who believe that science has developed in only one nation and that their own, there are to be found chosen spirits who possess the necessary preparation and adequate intelligence to collect, write and judge, and who, if they prefer to occupy themselves with their own country on account of reasonable sentiment and natural competency, do so with a large vision and an unprejudiced mind and deserve therefore to be inquired into and studied in their writings. In India, in so far as the history of chemistry is concerned, such a predominant position belongs to Sir P. C. Rây, to whom we owe quite a series of noteworthy works.

But the capital work of Ray's that will cause his name to be remembered, is the magnificent history of Indian chemistry from its origins to the middle of the sixteenth century."

Von Lippmann in his *Entstehung und Ausbreitung der Alchemie* (Berlin, 1919) gives an exhaustive summary of the two volumes of *Hindu Chemistry*; he also lays stress on the fact that "Der Verfasser ist ein geborner Indier" (p. 43).

The preparation of the first volume of the History entailed such hard and continuous labour that it did not leave me much time to pursue my studies in modern chemistry, which had been advancing by leaps and bounds and making gigantic strides. During these years argon had been isolated by Rayleigh and Ramsay and its discovery was soon followed by that of neon, xenon and krypton. Radioactive properties of certain compounds and minerals were being studied and examined by Becquerel, Rutheford and Soddy, and the Curies had brought to a culmination the researches in this line by the discovery of radium itself. Ramsay soon showed that certain emanations of radium itself were converted into the gas helium and this was again an irrefragable proof of the transmutation of elements. In the meantime atmospheric air had been liquefied in quantity by Dewar. No less astounding was the liquefaction of hydrogen. While these epoch-making discoveries were following one another in rapid succession, I was buried in my researches into the chemical knowledge of the Hindus of old and therefore losing touch with the modern world. On the completion of the first volume I therefore paused in my antiquarian studies and put aside altogether for a few years my completion of the promised second volume of *Hindu Chemistry* as I had now to catch up and be *en courant* with modern chemical literature. It should be noted here that my laboratory work was never allowed to suffer. In fact, an unbroken series of papers on the nitrites appeared during this time in the scientific journals, chiefly in that of the London Chemical Society.

CHAPTER IX

REMINISCENCES OF GOKHALE AND GANDHI

I had better pause here a little and break the continuity of my story to record my reminiscences of G. K. Gokhale and M. K. Gandhi with both of whom I came into close contact at this period. I am singling out only two notable characters here. If I were to recount my recollections of all the eminent Indians, I have come across, possibly a separate volume would be required. For instance, I was in touch with Ananda Mohon Bose and Surendra Nath Bannerji, both of whom I regarded as my revered *Gurus*. Nor need I dwell here upon all that I have learnt from my close association with the late Pandit Sivanath Sastri.

Sometime in 1901 Gopal Krishna Gokhale came to Calcutta to attend the session of the viceregal council. One fine morning Dr. Nilratan Sarkar called on me and asked me to be at once ready to accompany him to the Howrah station to receive the eminent Mahratta statesman. Within a few days we got to know each other and became fast friends. Gokhale was accompanied by his honorary private secretary, G. K. Deodhar, now the head of the "Servants of India Society". As there were some traits in common between us two, we could carry on our conversation on social, economic and political matters with mutual sympathy and understanding.

Gokhale's mastery of facts and figures and statistics has seldom been equalled and his speeches on the occasions of the presentation of the annual budgets by successive finance members have become classical. Even the masterful Lord Curzon was afraid of his trenchant, unassailable criticism and used to quail, so to speak, before it but that did not deter him from entertaining inwardly at least a high appreciation of Gokhale's abilities. In an autograph letter addressed to

Gokhale and which the latter showed to me, Lord Curzon concluded with the panegyric: *India has need of more men like you.* Since his premature demise in 1915, his place in the Imperial Council has never been worthily filled. Gokhale's speeches were characterised by moderation and sweet reasonableness and he was thus *persona grata* with the powers that be. He loved Bengal and the Bengalis and had many friends among them. The high encomium he bestowed upon the Bengalis (1907) is still remembered by the older generation.¹

Gokhale used now and then to see me in my little retreat at premises No. 91 Upper Circular Road in which was also located the office and factory of the Bengal Chemical and Pharmaceutical Works then in its infancy. He took particular delight in calling me a "Scientific Recluse." In those days my activity was naturally confined to the laboratory at the College and my little room which was both my bedroom and study.

Gokhale like other founders of the "Servants of India Society" and the professors of the Fergusson college at Poona had submitted himself to a self-denying ordinance by undertaking to serve on the bare pittance of rupees seventy five per month. He used to describe himself to me as an intellectual grandson of Dadabhoy Naoroji, the first great Indian, who had made the economic condition of this vast peninsula his

¹ "The Bengalees are in many respects a most remarkable people in all India. It is easy to speak of their faults. They lie on the surface, but they have great qualities which are sometimes lost sight of. In almost all the walks of life open to the Indians the Bengalees are among the most distinguished. Some of the greatest social and religious reformers of recent times have come from their ranks. Of orators, journalists, politicians, Bengal possesses some of the most brilliant. But I will not speak of them on the occasion because this class is more or less at discount in this place; but take science or law or literature. Where will you find another scientist in all India to place by the side of Dr. J. C. Bose or Dr. P. C. Ray or a jurist like Dr. Ghose or a poet like Rabindra Nath Tagore? My Lord, these men are not mere freaks of nature. They are the highest products of which the race is regularly capable; and a race of such capability cannot, I repeat, be put down by coercion."—*Speeches* (Natesan & Co., 1920) p. 309.

special study. Dadabhoy was followed by Mahadev Govinda Ranade who had also made Indian Economics his special subject of investigation. As Ranade may thus be regarded as a disciple of Naoroji, Gokhale, who was full of admiration for Ranade, whom he regarded as his *guru*, may thus claim to be Naoroji's grandson—economically speaking.

Gokhale was several years junior to me in age and I naturally in accordance with oriental ideas used to take liberties with him. Once I tore off a piece of paper and pencilled the following lines adapted from Byron and showed them to Gokhale: "Bhupen's politics is a thing apart. It is Gokhale's whole existence."² The fact is that during the lifetime of Gokhale and even long afterwards our political stalwarts like Ferozeshah Mehta (Bombay), W. C. Bonnerjee, Monmohon Ghosh, Ananda Mohan Bose, Bhupendranath Basu, etc. were busy plying their legal trade and commanding lucrative practice. Politics was then a sort of diversion. Even Surendra Nath Banerjee was engaged in the career of a Professor and Journalist. The National Congress used to be designed as "a three days' pic-nic" in the Christmas holidays.

Gokhale was the first politician who in the latter part of his career devoted his whole time and energy to the study of political problems. With this end in view he took care to collect a library of well assorted books on economics, political history, statistics etc., so that the future members of the *Servants of India Society* may be well posted in these subjects. Once he brought Mr. (now the Rt. Honourable) Srinivasa Sastri to my room and introduced him to me as a poor schoolmaster like himself and whispered in my ears that he looked upon him as his future successor. Gokhale's penetration and insight I need scarcely add have been more than justified. It is curious to note that the two great Indian statesmen who have commanded not only the applause but also the admiration and respect of

2 "Man's love is a thing apart
'Tis woman's whole existence."

the listening senates at home and abroad have been like my humble self schoolmasters.

I started for England for the third time from Bombay on May 1st, 1912. By a curious coincidence Gokhale happened to be my fellow-passenger and I immensely enjoyed and profited by his company. One incident comes vividly to my mind. An English merchant who had business relations in the East was returning home and was among the passengers. One morning at the breakfast table the conversation turned upon the amount spent by the Indian Government on education. He in a supercilious tone exclaimed: "What! are we not already spending too much on education?" Gokhale at once flared up and said: "Sir, what do you mean by 'we'? Am I to understand that England raises a sum by subscription and spends it as charity for education in India? Are you not aware that far from England spending anything that way, the revenues of India are frittered away and only an insignificant fraction of it is spent on education?" Gokhale was always known to be of imperturbable temper and this was the only occasion on which I saw him lose control of it. The effect at the breakfast table was almost magical. Everyone kept quiet. While I was on the deck shortly afterward some gentlemen spoke to me aside and pitied the English merchant saying that had he been aware with whom he was confronted he would have thought twice before exchanging a single word.

Towards the end of 1901, there came a notable visitor to Calcutta as a guest under Gokhale's roof—Mohandas Karamchand Gandhi. Needless to say, I was attracted to him from the very first by his magnetic personality and our common devotion to asceticism. My esteem for and intimacy with him have grown in intensity as the years have rolled on.

As Mahatmaji has, in his autobiography, given an account of our first meeting, I need not further refer to it. It is wonderful how after a lapse of a quarter of a century he could remember even the details of the conversations we used to have.

His memory, however, has been at fault on one essential point. It was from his lips that I heard for the first time a vivid and moving account of the disabilities under which the Indian settlers in the Cape laboured. I naturally thought and Gokhale agreed with me that if a public meeting could be arranged in Calcutta at which Mr. Gandhi would be the principal speaker, the grievances of our far-off countrymen would be brought home to our people. With this object in view I took the leading part in organising a meeting at the Albert Hall and I prevailed upon the late Narendra Nath Sen, the veteran editor of the *Indian Mirror*, to preside over it. The *Englishman* also took up Gandhi's cause with some degree of warmth and devoted some leaders to the South African situation. A short account of the proceedings of the meeting is given below from the *Englishman*, Monday, January 20, 1902.

MR. M. K. GANDHI ON SOUTH AFRICA.

Mr. M. K. Gandhi gave an interesting lecture last evening in the Albert Hall before a large audience on his experiences in South Africa. Mr. Narendra Nath Sen presided. There were present Raja Peary Mohan Mukerji, Hon. Prof. Gokhale, Messrs. P. C. Ray, Bhupendra Nath Basu, Prithis Chandra Ray, J. Ghosal, and Prof. Kathavate, and others. Mr. Gandhi after describing South Africa generally, described the position of the British Indians in that sub-continent. He said that in Natal the Immigration Restriction Act, the law relating to licenses, and the state of education of Indian children were the chief matters of concern. In the Transvaal the Indians could not own landed property nor could they trade anywhere except in locations. They could not even walk on the footpaths. In the Orange River Colony the Indians could not even enter except as labourers, and then under special permission. The lecturer said that the position was due to misunderstanding rather than to any deliberate intention. The misunderstanding arose and grew owing to the absence of English-speaking reliable Indians who might have acted as interpreters between the two communities. In order to remove these grievances they acted on two maxims:—viz. to stick to truth at all costs, and to conquer hatred by love. The speaker asked his audience not to treat the statement as merely a formality. To give effect to the policy they had established in South Africa an association called the Natal Indian Congress, which by its work had become a recognised force and was

considered by the Government as a very useful and indispensable body.. The Government sought its assistance on several occasions. The association has also raised funds in aid of the starving. The speaker concluded his remarks by saying that at the meeting he was merely concerned with bringing out the best points of the two communities.. There were harshnesses also, but it was better to contemplate the former. The Indian Ambulance Corps was raised in the same spirit. If they claimed the rights of British subjects they must recognise the responsibilities also of that position. The work of the Corps in which the Indian labourers worked without pay was specially mentioned in General Bullers' despatches.

Raja Peary Mohan Mukerji moved a vote of thanks to the speaker., and the Hon. Prof. Gokhale seconded it. Mr. Bhupendra Nath Basu and Mr. Gokhale also spoke. A vote of thanks to the chair brought the proceedings to a close".

I was thus in a manner responsible for Mr. Gandhi's first appearance on a Calcutta platform. It will be seen from the above that even as early as the dawn of the present century the ideas of Satyagraha and Passive Resistance which were destined to be such potent factors after a generation had already germinated.

The frequent conversations which I used to have with Mr. Gandhi made a deep and lasting impression on me. He was then earning as a barrister several thousand rupees a month but he was utterly regardless of worldliness—"I always make it a point to travel third class in my railway journeys, so that I might be in close personal touch with the masses—my own countrymen—and get to know their sorrows and sufferings". Even after the lapse of thirty years, these words still ring in my ears. *Truth lived is a far greater force than truth merely spoken.*

CHAPTER X

SECOND VISIT TO EUROPE—PARTITION OF BENGAL— IMPETUS TO SCIENTIFIC STUDY

I now made up my mind to proceed to Europe and visit some of the laboratories under renowned specialists so that I might be in direct touch with up-to-date methods of research and imbibe fresh inspiration, which living and personal contact with master minds can alone impart. There was a Government Circular under which a European officer of a Scientific Department proceeding home on furlough was granted certain special concessions in the shape of travelling and halting allowances on condition that he utilised a portion of the study leave for the purpose mentioned above. My colleague J. C. Bose partly because he was a member of the Imperial Service, but chiefly because of the high fame he had won in the field of Hertzian waves was allowed previously to avail himself of this concession. There was some difficulty, however, in relaxing the rigidity of the above rule in my favour, as I belonged to the Provincial Branch of the Education Service. All the same I informed the Director of Public Instruction (Pedler) of my intention to visit European laboratories. A few months elapsed and I heard nothing in reply. One day to my surprise, I was forwarded a copy of a minute by the Governor-General-in-Council over the signature of Curzon, Kitchener, etc., in which it was laid down that a native of India who had shown capacity for original research should not be precluded from advantageous study leave simply because he happened to be a member of the Provincial Service. I now got myself ready for my voyage to Europe ; but on the eve of my departure I called on Pedler to express my thanks for all that he had done to facilitate my deputation. In the course of the conversation which followed, he pulled out from a drawer a

note of the "case" he had made out for me. I confess I felt almost embarrassed when I went through it as Pedler had spoken in almost unreservedly high terms about my contributions including my *History of Hindu Chemistry*.

I made the voyage direct from Calcutta to London about the middle of August, 1904, exactly twenty-two years after my first voyage. We had a few English fellow-passengers who got down at Colombo. It was the height of the monsoon season. In the Arabian Sea I had a bad time of it for eleven days or so. I have a vivid, unpleasant recollection of the time as I got very sick and had to lie down in the upper saloon most of the time, and my steward used to feed me while I was in this recumbent posture. As I was the only passenger during this portion of the voyage I had the saloon all to myself. A few passengers joined us at Port Said and Malta and one of them was very lively and humorous. Talking of the foot-ball matches he observed that the physical exercise involved in the game is only confined to the Teams—*eleven* vs. *eleven*: but what of the thousands who watch the games as spectators.¹

The voyage proved to be tedious and I suffered from diarrhoea, to which I am always prone, during the last fortnight or so. My stomach is very sensitive and unless I get fresh articles of diet, it is upset. Although, as a rule meat, fish, and vegetables are kept in cold storage, they deteriorate somewhat in quality and should be regarded as stale; the fibres get tough and they derange my digestive functions. I began to grow uneasy and even feared that on reaching London I might get worse. I had, however, been barely twenty-four hours at a hotel there when I forgot all about my stomach complaint. Although I have made several voyages to England since then, my experiences on board the ship have

¹ Very recently (1926) similar observations have been made by competent authorities; cf. "We watch games instead of playing them". M. L. Jackson, Headmaster, Mill Hill.

been of the same nature and I have always been under the necessity of travelling by the mail steamer from Bombay to Marseilles in order to abridge the distance, or rather, shorten the duration of the voyage.

After a few days' stay in London, I began to get uneasy. Mere sight-seeing had scarcely any charms for me ; indeed during my student career I lived only a few months in this vast city. Those who are accustomed to work several hours in the day in the laboratory, always find time hanging heavily on them when away from it. I therefore began to look about for an opportunity to continue my investigation in some laboratory. J. C. Bose had previously worked in the Davy-Faraday Research Laboratory, and I secured an easy admission into it, thanks to the interest shown by Prof. Crum Brown and Sir James Dewar. My time was now fully occupied and at intervals I used to make visits to the laboratories of the Imperial College of Science and the University College. Dewar had been engaged for several years in the epoch-making experiments on the liquefaction of gases and was at the time engaged in separating argon, neon and xenon from air by aspirating it through cocoanut charcoal, packed in U-tubes immersed in liquid air. I had now an opportunity of watching these.

At the University College Laboratory, Sir William Ramsay explained to me the working of the apparatus designed by him and Dr. Travers for isolating the above-named constituents of atmospheric air. I was thus brought into close and intimate touch with the leading chemists of the day. I spent the Christmas vacation of 1904 at Edinburgh and saw some of my old friends there. The Indian students gave me a warm reception at a meeting organised by them at the Caledonian Hotel and invited Prof. Crum Brown to preside over it.² It was indeed an agreeable function. The Royal Society of Edinburgh invited me to a dinner at which Sir James Dewar

² I have recently (1931) learned that Dr. Ansari was one of them.

was the principal guest. Prof. Crum Brown in toasting Sir James's health took care to couple my humble name with his. Following in the wake of so distinguished a man I naturally felt rather awkward and nervous but responded as best I could.

From Edinburgh I proceeded northward to Dundee to see my friend and fellow-student James Walker and his laboratory. I then travelled southward to London and broke my journey at Leeds, Manchester and Birmingham, visiting the laboratories at each place and making acquaintance with Professors Smithells, Cohen, Dixon, Perkin, Frankland and other chemists, all of whom warmly received me. On my return to London I continued my work for a month or so and then started for the Continent. Ramsay had kindly furnished me with several letters of introduction to eminent chemists. I put up at Charlottenburg (near Berlin) for a week and visited the celebrated *Technische Hochschule* and the *Reichsanstalt*. Erdman who was Professor of Inorganic Chemistry at the *Hochschule* received me very hospitably and showed me over the place. I also saw Van't Hoff and his laboratory. The great Dutch chemist was then studying "Salzbildung" *i.e.*, the conditions under which the enormous deposits of potassium and sodium salts at Stassfurt had been formed from the sea-salts. Meyerhofer was also working in collaboration with him. Van't Hoff spoke English well and I could therefore converse with him freely.³ I took the liberty to ask him, even at the risk of being considered impertinent, if it was consonant with the patriotic spirit of a Dutchman to leave his own country and carry on his researches in a foreign land.⁴ He replied

³ I have since then come to know that Van't Hoff was well read in his earlier years in some of the English classics: Byron, Burton (*Anatomy of Melancholy*) and Buckle were his favourite authors.

⁴ In a biographical sketch of the great chemist occurs this passage: "It goes without saying that Van't Hoff's migration (to Berlin) met with criticism in Holland. He was pictured as unpatriotic. Even the Dutch *Punch* did not spare him".

that the German Emperor had done everything to facilitate his work, had provided him with a special laboratory suited to his purpose and that he had only to lecture once a week so that he might devote his entire energies to the solution of the problem in hand. Van't Hoff asked me if I knew my countryman, Aghorenath Chattapadhyaya⁵ (every letter of which was pronounced with wonderful accuracy). The explanation is simple, when it is borne in mind that Aghorenath had taken his Doctorate in 1875 and in the previous year Van't Hoff and Le Bel had independently and simultaneously propounded the theory of asymmetric carbon. I believe that Aghorenath was awarded the Vans Dunlop Scholarship of the Edinburgh University and proceeded to the Continent to complete his chemical studies. His head was capacious and full of grandiose ideas; he had evidently come into close contact with Van't Hoff then a young man of only twenty-three and discussed with him the immense potentialities of the new theory. It is to be regretted that this giant intellect was practically lost to India, at least as far as Chemistry was concerned.

Aghorenath on his return to India became head of the Education Department in the Nizam's dominions but unfortunately embroiled himself in party politics and was in the forefront of the Nationalist movement which wanted the Chandwa Railway to be constructed with capital raised in Hyderabad itself. This evidently did not suit the purpose of the meddling political agent who thought after his kind, that not only British India proper but also the feudatories should be reserved for British exploitation. The enraged Resident externed the meddlesome Bengali, often the *bête noire* of the Anglo-Indians of this class, and Aghorenath was compelled to leave Nizam's territory within 24 hours of the issue of his ukase. I remember as a boy reading the *Hindu Patriot* one

⁵ I need scarcely add here that Aghorenath was the father of the gifted poetess and political leader Sarojini Naidu.

day in which the Editor (Kristodas Pal) lectured to the school master (meaning Dr. Aghorenath) to keep clear of politics.

I also visited Emil Fischer and his laboratory. He had just finished his memorable researches on the purine group, i.e. uric acid and its derivatives, caffeine, xanthine, theobromine etc., and was going on with his investigations on the amino-acids which are derived from the proteins.

From Berlin I proceeded to Berne and Geneva and Zurich. At the last place I went carefully through the polytechnic. Prof. Richard Lorenz was in charge of one of the electric departments; I had already corresponded with him several times as he was the editor of *Zeitschrift für anorganische Chemie* (Journal of Inorganic Chemistry) in which some of my papers had been published. I then directed my course towards Paris *via* Frankfurt am Main. At the latter place the guide showed me a house associated with the memory of Goethe.

The metropolis of France had become almost a place of pilgrimage to me. The very birth of Modern Chemistry is associated with it. Here it was that Lavoisier laboured and placed on a firm basis irrefutable proofs which subverted the phlogiston theory—here it was that a noble band of chemists had one by one rallied round his banner and slowly become converts to his views. The names of Berthollet, Fourcroy, Guyton de Morveau will for ever be mentioned in connection with the illustrious founder of our science.⁶ Paris has also been the scene of the labours of Gay-Lussac, Thenard, Caventou, and Pelletier (the discoverers of quinine) and a host of others whose names will go down to posterity as the early torch-bearers of Chemistry. Indeed up till the fifties of the last century the boast of Adolph Wurtz was fairly justified.⁷

⁶ Those who are further interested in the subject may consult my *Makers of Modern Chemistry*.

⁷ "Chemistry is a French Science; its founder was Lavoisier of immortal memory".

On arriving at Paris, the first thing I did was to call on M. Sylvain Lèvi, whom I had quoted as an authority on Buddhist literature in my *History of Hindu Chemistry* and with whom I had corresponded from Calcutta. When I was shown into his room I found the eminent Indologist buried in the *Mahabhasyam* of Patanjali (evidently Goldstücker's edition). It was arranged that the next morning I should meet him at the *Collège de France* where he undertook to introduce me to M. Berthelot, his colleague. I presented myself there at the appointed time and it so happened that within a few minutes Berthelot was entering his laboratory from the opposite side of the quadrangle. When Professor Lèvi formally introduced me to the great chemist, a peculiar sensation crept over me. Here was I at last in the presence of the illustrious savant, the doyen of the chemical world, who had done more than any other person to clear up the sources and trace the progress of chemical science in the west and who was one of the greatest masters of Synthetic Chemistry.

Berthelot took me over his laboratory and showed me the historic apparatus, preserved in glass cases, he had made use of half a century before in the synthesis of organic compounds commencing with the simplest member of the series, namely, acetylene. At his invitation I also visited him at his residence. As perpetual Secretary of the Academy of Sciences, he occupied quarters at the Institute. Berthelot had with commendable foresight taken care to invite one of his sons who had been for a time at Cambridge, I believe, and who could speak English well, to be present at the appointed time. We thus got on well in conversation, which lasted nearly an hour. He also invited me to be present at one of the sittings of the Academy and introduced me to the President M. Troost, a chemist of eminence, then in his 71st year. The following extract from *La Nature* might prove interesting to some: "Académie des Sciences. Séance du 6 mars 1905—Présidence de M. Troost. Présence d'un savant étranger.—M. le Président

annonce que P. C. Rây, professeur de chimie à Calcutta, auteur des travaux importants sur les nitrites, ainsi que d'une Histoire des chemists hindous, assiste à la séance et lui souhaite la bienvenue."

During my sojourn in Paris I was also much in touch with M. Lèvi who invited me to an evening soirée and visited me at my hotel and took me over the *Bibliothèque Nationale*. I met here M. Palmyr Cordier, a medical officer in service in French India who had resided several years in Chandernagore and had studied Tibetan. He wrote several treatises on Indian medicine, based on Buddhist literature. I had already made his acquaintance at Calcutta through Pandit Haraprasad Sastri if I remember rightly.

I also visited the laboratory of Moissan who is better known to the general public as the discoverer of carbide of calcium and artificial diamond. The eminent chemist showed me the beautiful octahedrals of the gem under the microscope. I was agreeably surprised to find that Moissan had in his encyclopædic treatise on Inorganic Chemistry given a full, detailed account of my researches on mercurous nitrite.

I cannot conclude my visit to Paris without giving some account of Berthelot and his phenomenal versatility. For more than half a century he was a conspicuous figure in the chemical world and the titles alone of his contributions occupy one complete issue of the French Journal of Chemistry. He was an indefatigable worker and his knowledge was encyclopædic. One of the greatest masters in Synthetic Chemistry, he may also be regarded as a founder of Thermo-chemistry and in the latter capacity he shares the laurels with his great rival, Julius Thomsen of Copenhagen. He is also an acknowledged authority on the History of Chemistry and his works and memoirs on this subject would occupy several shelves in a library. He also made valuable experiments on agricultural chemistry. He was, moreover, a life-senator and twice a cabinet minister. In the whole range of Chemistry I am not aware of any other man, whose outlook was so wide, whose

tastes were so diversified and whose contributions so varied. His friendship with Renan forms an interesting chapter in the intellectual history of France in the second half of the nineteenth century. No wonder that a unique ceremony was inaugurated in 1901 mainly through the exertions of his former distinguished pupil, Moissan, to commemorate the jubilee of the 50th year of his professorship.⁸ The entire French people, headed by their President, participated in the function, and representatives of European and American scientific societies also joined in congratulating him. His funeral was also national.

"Men of science in this country will probably have to wait a long time before they will see the Government and nation pay such a tribute to the greatness of one of their number as was witnessed in Paris on Monday, when the national funeral of M. Berthelot took place at the Pantheon. Here politicians and people have little sympathy with intellectual greatness; and if M. Berthelot had lived in Great Britain instead of France his death would have been mourned by the world of science, but the Government would certainly not have hastened to secure for him the honour of a national funeral, because our statesmen do not know the influence of scientific work on national character and progress; and to them men of science live in a world, for beyond the range of practical politics, where virtue finds its own reward". (Berthelot: born 1827; died 1907) *Nature*, March 28, 1907, p. 514.

On my return to Calcutta I resumed my duties with fresh zeal and ardour. I had rubbed shoulders with some of the great masters of our science and had seen much of the work carried on by them in their own laboratories and I now tried

⁸ To celebrate his seventy-fifth birth day and the jubilee of his first appointment in the Collège de France, his colleagues inaugurated a great meeting of congratulation and commissioned M. Chaplin to design a medal in his honour. *The meeting was held in the great hall of the Sorbonne on November 24th, 1901.* Berthelot declined the procession and the military escort offered by the state, and went on foot to the hall. He was received by the president of the republic".—*Journ. Chem. Soc.* 1911, p. 2370.

to emulate their activities as best I could. In this respect I began however to grow uneasy. In England, France, and Germany I found the people, young and old, full of life and energy. If they would once take up a subject they would not leave it half-finished, but would stick to it and see it through ; they would pursue it with a bull-dog tenacity of purpose. In Bengal, however, my sad experience is that even youngmen approach a subject in a half-hearted manner. Any initial difficulty disheartens them, they would like to have their path strewn with roses. An English youth on the other hand, wherever he encounters any hardship, is put on his mettle ; it calls forth his latent energies. The Bengali is cheerless, does not know how to enjoy life. He is dreamy and loves to lead a somnolent sort of existence. The average Bengali reminds one of Tennyson's *Lotus-eaters*.

I was thus thinking rather mournfully of these defects in our national character, when an event happened, which proved to be, as it were, a God-send and which for the time being at any rate infused vitality into the dry bones of Bengal's inert life—I mean the Partition of Bengal by Lord Curzon.

It has often struck me as singular that Bengal proper, Orissa and Assam are by language, if not by race, almost one and the same. The Bengali, Oriya and Assamese languages seem to be derived from the same stock. This is rather striking in view of the fact that big rivers like the Padma and Brahmaputra interpose between West and East Bengal. Moreover Orissa was the scene of Chaitanya's active propaganda in his last days, culminating in the conversion of Raja Rudrapratapa himself. The Vaishnava scriptures composed in Bengali e.g., *Chaitanya Charitamrita*, *Chaitanya Bhagabat*, etc., as also the Kirtans have helped to popularise the Bengali literature there. As for Assamese any Bengali with a little effort can follow it. In fact, linguistically the three provinces can be regarded as almost one solid whole.

Lord Curzon, as an evangel of imperialism, had observed with dismay that in Bengal a national consciousness was grow-

ing apace ; her literature had already become rich and had acquired the first position among the Indian Vernaculars. Since the days of Ram Mohon Ray she had assiduously cultivated western literature and her sons had become inoculated with patriotic sentiments. All that contributes to the making of a nation was slowly but silently gaining ground. *Divide et impera* was the favourite policy of the Roman Empire-builders, and Curzon was anxious to follow in their wake and borrow a leaf from their history. He had evidently the map of Bengal constantly before his eyes and he deliberately forged a mighty weapon with which he aimed a blow at the unsuspecting Bengalis from the effects of which they will take long to recover. With the cold-blooded wisdom and ingenuity of a Machiavelli, Curzon partitioned Bengal into two halves, taking good care that the north-eastern slice should have an overwhelming preponderance of Moslem population ; he also through his willing tools and lieutenants, held out tempting baits to the latter, or rather their leaders, in order to sever them completely from their Hindu brethren. A wedge was driven through Bengal which would for ever destroy its solidarity and make the Hindu and Moslem communities hostile to each other and care was taken to stab Bengali nationalism in its very heart.

A fallen and depraved people can scarcely afford to think of the future consequences of a measure conceived in subtle cunning. Fortunately for Bengal, her destiny was then in the keeping of able leaders, under the guidance of Surendranath Bannerjee. A wave of protest rose, which day after day gained in volume and intensity ; for the first time in her history her inmost depths were stirred ; youth and age alike felt the impulse. The sleeper was roused from his age-long slumbers and Curzon indirectly acted as the awakener of Bengal.

However, as a Government servant I was precluded from taking any active part in the movement, but from my recess in the laboratory I watched it steadily and I need scarcely add my heart went out to it. This new awakening brought in its train the ideal of studying science for its own sake.

CHAPTER XI.

INTELLECTUAL RENAISSANCE IN BENGAL.

Geistige Wiedergeburt.—Goethe.

(Intellectual Revival).

The genius of the Hindu is eminently subtle and his bent of mind is metaphysical. James Mill was by no means guilty of exaggeration when he wrote: “The Hindu boys display marvellous precocity in appreciating a metaphysical proposition which would hopelessly puzzle an English lad.” But it was keenly felt that the metaphysical knowledge alone will not do. It is indeed strange to find that a little over a century ago (1822) Ram Mohon Ray addressed a spirited letter to Lord Amherst, Governor-General of India, in which he entered a vigorous protest against the establishment of the Sanskrit College in the course of which he took occasion to observe:

“We find that the government are establishing a Sanskrit School under Hindu Pandits to impart such knowledge as is already current in India. This seminary (similar in character to those which existed in Europe before the time of Lord Bacon) can only be expected to load the minds of youth with grammatical niceties and metaphysical distinctions of little or no practical use to the possessor or to the society. The pupils will there acquire what was known two thousand years ago with the addition of vain and empty subtleties since then produced by speculative men such as is already commonly taught in all parts of India. . . . If it had been intended to keep the British nation in ignorance of real knowledge, the Baconian philosophy would not have been allowed to displace the system of the schoolmen, which was the best calculated to perpetuate ignorance. In the same manner the Sanskrit system of education would be the best calculated to keep this country in darkness, if such had been the policy of the British Legislature. But as the improvement of the native population is the object of the government, it will consequently promote a more liberal and enlightened system of instruction, embracing Mathematics, Natural Philosophy, Chemistry, Anatomy, with other useful sciences, which may

be accomplished with the sum proposed by employing a few gentlemen of talent and learning, educated in Europe, and providing a college furnished with necessary books, instruments, and other apparatus”.

The value of this letter becomes all the more significant when it is borne in mind that the great reformer, the Maker of modern Bengal, or, for the matter of that, of modern India, was himself a great Sanskrit scholar. It was he who for the first time gave an impetus to the study of the *Upanishads* in Bengal, some of which he rendered into Bengali and afterwards into English. Ram Mohon though deeply imbued with *Vedanta* had a vision of the India of the future in which the study of the physical sciences was to play a conspicuous rôle. Sixty years later Bankim Chandra in his famous novel *Ananda Math* (Abbey of Bliss) did not fail to assign the part which physical science should play in the shaping of India's destiny.¹ That vigorous and robust thinking which characterised the days when the six systems of Hindu philosophy had been elaborated and which has very aptly been styled the *Rationalistic Age* had been for ages a thing of the past. Hindu intellect came to be under the domination of scholastic philosophy and revelled in the dialectics of the schoolmen and a sort of learning was in vogue under which, to quote the happy words of Buckle, “the more learned the votaries were the more ignorant they grew.”

Happily for India, Ram Mohon sounded the note of warning, pointed out the direction in the midst of his pitch dark

¹ *Vide* preface to the 2nd ed.; extract from a review by the *Liberal*. “Knowledge is of two kinds—external and internal. The internal knowledge constitutes the chief part of Hinduism. But internal knowledge cannot grow unless there is a development of the external knowledge. The spiritual cannot be known unless you know the material. External knowledge has for a long time disappeared from the country, and with it has vanished the Arya faith. To bring about a revival, we should first of all disseminate physical or external knowledge. . . . English education will give our men a knowledge of physical science and this will enable them to grapple with the problems of their inner nature”.

and obscure surroundings with the accuracy of a mariner's compass. Macaulay's famous minute (1835) was in no small measure responsible for the intellectual renaissance of India, however much neo-Hindu revivalists may take offence at some of the passages in it. The victory of the Anglicists over the Orientalists ushers in a new era in the history of modern India. With what zeal the youngmen of Bengal took to the literature of the West need not be described here. Shakespeare and Milton ; Bacon, Locke, Hume and Adam Smith ; Gibbon and Rollins ; Newton and Laplace, opened up a new world before their vision. No wonder that they became almost intoxicated by drinking the new wine and even ran amock so to say.

Fortunately, steadying influences were at work almost imperceptibly side by side. Bhudev Mukherjee and Rajnarayan Bose, though among the votaries who worshipped in the new temple, did not altogether cast off the old moorings. Devendranath Tagore, another alumnus of the old Hindu College, must also be regarded as a product of the confluence of the east and west and a disciple of Ram Mohon Ray ; and this early torch-bearer of the Brahmo-Samaj was deeply imbued with *Vedanta* philosophy.

In the history of nations it is often found that contact of one civilisation with another brings about strange and on the whole beneficial results. Proud Rome did not disdain to learn at the feet of vanquished Greece. Alexandria favoured by her position as the meeting-place of the Eastern and Western nations was the birth-place of neo-Platonism and in her marts besides the exchange of commercial products there was also an interchange of thoughts. Erasmus, the brothers Scaliger, Budd and a host of classical scholars contributed not a little to the unearthing of the intellectual treasures of ancient Greece and Rome, which lay buried for practically a thousand years. The light which burned only dimly in the dark cells of the monasteries was now rendered available to the general public. Then again the writings of the Italian Petrarch and Boccaccio helped

not a little in the making of the English Chaucer.² Milton was deeply indebted to Dante and he had also journeyed to Italy to seek inspiration as we gather from his description of the Vallambrosa brook thick with autumnal leaves.

Molière's studies in *belles lettres* meant much Latin, a little Greek and no French. The mother-tongue was of course too vulgar to enter into the curriculum of the refined scholars. The earlier immature productions of the future immortal comedian betrays Italo-Spanish influence but in his master-pieces the genuine Gallic stamp is plainly discernible. History repeats itself. Likewise, the father of epic poetry in modern Bengal—a product of the old Hindu College—had a supreme contempt for his own mother-tongue. He too revelled in Dante and Milton and he composed his first poem—*The Captive Lady* in a foreign tongue. Milton too tried his skill in composing Latin poems, but he soon found out his mistake. Macaulay very pertinently says: "Versification in a dead language is an exotic, a far-fetched, costly, sickly imitation of that which elsewhere may be found in healthful and spontaneous perfection. The soils on which this rarity flourishes are in general as ill-suited to the production of vigorous native poetry as the flower-pots of a hot house to the growth of oaks."

Madhusudan Datta like Milton was not long in realising that if he was to secure a permanent place in literature and in the niche of fame he must compose poems in the language of his nursery and he has left us a priceless legacy in his *Meghnadbad*, although in his immortal epic one can catch glimpses of Homer, Virgil, Dante, Tasso and Milton in the description of heaven and hell and in the delineation of several characters. Even Bankim Chandra, the first graduate of the Calcutta University, who may be regarded as belonging to a

² I woll you tell a tale which that I
 Learned at Padowe of a worthy clerke :
 Franceis Petrark, the Lureate poete
 Highte this clerke, whose rhetoric swete,
 Enlumined all Itaille of poetrie.

later generation, was under the same glamour and spell when he wrote his first romance *Rajmohon's Wife* in English. But he soon found out his mistake and abandoned the foreign in favour of his mother tongue and wielded his pen with signal effect and earned imperishable renown.

Borrowing does not always mean slavish imitation or lack of originality. As Emerson says: "The greatest genius is the most indebted man. * * * * Great genial power, one would almost say, consists in not being original at all." Again: "Shakespeare in common with his comrades, esteemed the mass of old plays waste stock, in which any experiment could be freely tried". Take *Hamlet* for instance. As a matter of fact an English drama on the subject, possibly by Kyd, was written as early as 1589. In the history of a renaissance it is always found that copious borrowing is co-eval with assimilation of ideas and thoughts and these soon become a part and parcel of one's own national literature.

The development and enrichment of Arabic literature may be cited here as a notable illustration. The orthodox and Umayyad Caliphates are from the intellectual point of view barren. Strictly speaking there was scarcely anything which may be called *literature* in Arabia during this period. Poetry depicting the simple life of the Bedouins forms its characteristic feature. It was however during the Abbasid rule that the many sided life of the Moslems found full expression and vigour in a copious literature which was enriched by wholesale borrowing from Greece. Under Caliphs Mansur and Mamun, Hellenic culture found full scope. The works of Aristotle, Plato, Galen, Ptolemy as also of the neo-platonists Plotinus and Porphyry were translated often from the Syriac versions as also direct from the Greek text. Among the *Falasifa* school (i.e. those who read in the original Greek) the names of Al-Kindi, Al Forabi, Ibn Sina (Avicenna) Al Razi (Rhazes) as also the Spanish philosopher Ibu Rhshd (Averroes) who flourished in the 12th century A.D., stand conspicuous.

"This material expansion (in trade) was accompanied by an outburst of intellectual activity such as the East had never witnessed before. It seemed as if all the world from the Caliph down to the humblest citizen suddenly became students or at least patrons of literature. In quest of knowledge men travelled over three continents and returned home, like bees laden with honey, to impart the precious stores which they had accumulated to crowds of eager disciples, and to compile with incredible industry those works of encyclopædic range and erudition from which modern science, in the widest sense of the word, has derived far more than is generally supposed." Nicholson: *Lit. Hist. of the Arabs*, p. 281. The contributions of the Arabs in the domain of philosophy and science in the middle ages need not be dwelt upon here, nor is it necessary to mention that in mathematics and medicine they are deeply in debt to India.³

The Arabs in their palmy days were in turn the bringers of light to mediæval Europe and wielded an enormous influence on Latin scholasticism. A separate chapter may be written on the reciprocity of intellectual debt between Asia and Europe.

If one studies the history of modern Bengali literature from its formative stage under William Carey and the school he founded (1800-25) down to the fifties of the last century, one cannot but be struck with the fact that by far the larger number of books were mere translations from the copious and rich English authors and a few from Sanskrit, Persian and Urdu.

Iswarchandra Vidyasagar's earliest *Vetal Pancha Vingsati* was based upon an Hindi version and his somewhat later and more mature works, *Sakuntala* and *Sitar l'anavasa* (exile of Sita), were adaptations from the Sanskrit masterpieces of Kalidas and Bhababhuti, while his *Kathamala* was based upon Aesop's

³ Vide : *Hist. Hindu Chemistry*, 1 Ch. VI. "Indebtedness of the Arabians to India".

Fables ; his *Jivancharita* (Biography) was almost a literal rendering of Chambers' *Biography*.

Shakespeare's plays were also translated into Bengali. Akshayakumar Datta was the first Bengali writer of note who enriched Bengali with translations from astronomy and natural philosophy, while his contemporary, Rajendra Lal Mitra, did similar service in the departments of physical geography, geology, zoology etc. Krishna Mohan Banerjee's *Vidyakalpadruma* (Encyclopædia Bengalensis) to which reference has already been made was a bilingual polyglot consisting of extracts from standard English writers with Bengali translations. This is as it should be. But for North's translation of Plutarch, there would have been no *Julius Cæsar*, *Coriolanus*, and *Antony and Cleopatra* ; if there were no English version of the Danish writer Saxo Grammaticus, the world would probably have been deprived of the matchless masterpiece of *Hamlet*. The protagonists of our own literature paved the way for their successors. In the infantile stage, fed on the milk of the foster-mother, the child had slowly grown to adolescence and was no longer dependent on extraneous nourishment. The period of borrowing and assimilation was naturally followed by the period of original productivity ; *Allaler-gharer-dulal* (the spilit child) is of striking originality ; being a faithful portrait of the Bengali Society in the fifties of the last century ; in it not a trace of the cumbrous Sanskrit Johnsonian style of some of the older generation of writers is noticeable. Peary Chand Mitra is master of a vigorous, colloquial style as well as of biting incisive sarcasm. He too entered the Hindu College and was classmate of Krishna Mohon Banerjee, Ram Gopal Ghosh, etc. The impact of the West and the East has brought most striking results as far as the intellectual development of Bengal is concerned.

The Brahmo Samaj movement aimed at the abolition of caste-system, the removal of social inequalities and uplifting of women by the spread of education among them. It was altogether democratic in its tendency. The great Hindu

Society, although it did not fully share the Brahmo doctrines and follow the practices, was at heart in sympathy with and could not fail to be leavened by, them.

There was ferment all around. A new world had been opened out ; new aspirations were awakened. Roused from a period of stupor and stagnation young Bengal began to realise that there were immense possibilities in the Hindu nation. The literature of this period breathes lofty patriotism. Political associations and newspapers had also been started to give expressions to the pent-up feelings and ventilate the grievances of a subject people. Schools and colleges were springing up in the interior of the province, mainly through the efforts and initiative of the educated middle classes. All the same, science had not yet secured proper recognition. Botany, Chemistry and Physics were no doubt taught in some of the Government Colleges but science had yet to come into its own. It should not only be cultivated for its own sake and attract votaries who will cheerfully dedicate the best years of their life to its pursuit, but it should also assert its proper place in the literature of the nation, so that its discovered resources may be applied to the requirements of everyday life. It should be an instrument for the increase of national wealth and comfort. It should play a prominent part in the eradication of pests to which man and beast alike are liable. All the advanced nations of the world are in living touch with science and its boundaries are being constantly enlarged. In a word, science has been harnessed to the service of man.

Unfortunately, the Hindu intellect, lying dormant and fallow for ages, was overgrown with rank weeds and brambles. Science was introduced into the curriculum of the degree examinations ; but the Bengali youth went through it mechanically without acquiring a real taste for the subject. His one object was to secure a hallmark, which is a passport to a professional career or a clerical appointment in Government departments. In Europe there have been votaries of

science during the last four centuries who have pursued it for its own sake, never expecting to reap any pecuniary benefit and sometimes braving the frowns of the Inquisition. Roger Bacon (1214-1284) was thrown into dungeon for his daring attempts to wrest from Nature her secrets. Copernicus withheld his immortal work from the light of day for forty years lest it should be consigned to the flames and its author himself burned at the stake. The great Kepler once exclaimed: "I may well wait a hundred years for a reader, since God Almighty has waited six thousand years for an observer like myself". The age of Elizabeth, following in the wake of the Renaissance, not only produced a galaxy of poets and brilliant prose-writers but also eminent pioneers of modern science. Gilbert, earning his bread as a physician, whiled away his leisure hours in experiments on electricity. Harvey discovered the circulation of blood and Francis Bacon, although his claims have been exaggerated, may be said to have laid the foundation of inductive methodology.

Paracelsus (1493-1541), whether he be called a charlatan or a sage, did inestimable service to the cause of Chemistry by his boldness in prescribing metallic preparations and thereby giving an impetus to the pursuit of Chemistry. From his time onwards Chemistry began to assert herself and stand on her own legs and was not content with being merely a handmaid to medicine. Agricola (1494-1555) in his *De Re Metallica* which is a complete treatise on metallurgy and mining did much to advance the processes of technical Chemistry.

But in India the state of things was quite different. The Hindu nation had lain in a moribund condition for a thousand years or more. Religion had lost its vitality and degenerated into the mechanical observance of certain unmeaning rites and repeating of dry formulæ and blindly following usages and customs, which may have had some utility a couple of thousand years ago. The Hindu intellect had become dull and benumbed. Our ancestors had lost the power of thinking for themselves and slavishly and blindly followed the injunctions of the

Sastras as interpreted by Raghunandan of Navadwip and his like. The caste-system had taken firm root in Hindu society. Hence it was that a considerably longer period was necessary to bring about a change in the mentality of our nation and awaken the scientific spirit.

Already in the seventies of the last century Dr. Mahendralal Sarkar had made a passionate appeal to the patriotism of our wealthy men and raised considerable sums for his Indian Association for the cultivation of science. He made arrangements as I have stated before, for evening lectures on Chemistry, Physics and later on Botany. Originally it was not meant to be affiliated to the Calcutta University so that anyone on the payment of a moderate fee could attend a course of lectures on Physics and Chemistry. Among the early honorary lecturers were Dr. Sarkar himself, Father Lafont and Tara Prasanna Ray. About the year 1880-81, although I joined the Chemistry and Physics classes at the Presidency College, I attended a course of lectures on these subjects at the Science Association in order to further supplement my knowledge. But somehow or other Dr. Sarkar's attempts were not very successful. Perhaps he was in advance of his time and there was no real craving for the pursuit of science. In those days the privately managed colleges, being poor in resources, could not afford to have a science department and were content to be merely so many "arts" colleges. Those students, who wanted to take science subjects for their intermediate examinations, used to attend lectures on Botany, Chemistry and Physics at the Science Association. Within the last 25 years, however, the private colleges have opened science classes of their own and the Science Association lecture-rooms have become almost deserted.

At the Engineering College or the Medical College or in the several non-professional colleges students attended lectures on some of the scientific subjects simply as a matter of course, because they were included in the curricula for degree examinations. This only shows that there had

been no real thirst for science, which etymologically is synonymous with knowledge. In England on the other hand, a son of the Earl of Cork, the Honourable Robert Boyle, in the middle of the seventeenth century not only made epoch-making discoveries in physical science in his private laboratory but also in his *Sceptical Chymist* laid down the lines on which modern Chemistry is to make progress.

Quite a century later, again, a scion of the great historic house of Devonshire, with a million sterling (equivalent to at least five million of the present time) rusting in his bank, lost himself in the pursuit of Chemistry and Physics in his own privately equipped laboratory and left a priceless legacy to the world at large and earned imperishable renown. Some of his contemporaries, e.g. Priestly and Scheele, struggling with poverty and earning a precarious livelihood and with such apparatus as they could improvise out of broken glass tubes, clay tobacco pipes and troughs from beer-barrels cut into halves, made far-reaching discoveries. But in Bengal at that time there was darkness encompassing all around.

The depth of degradation into which Bengali society had sunk is depicted vividly by a thoughtful writer. When Ram Mohon Ray appeared on the scene, the state of Bengal may be gathered from the portrait delineated by Nagendranath Chatterjee in his biography of the Reformer. Hindu society was then wrapped in Cimmerian darkness.⁴ Rank superstition stalked over the land. One might with impunity violate the unwritten moral code and hold his head aloft in the social circle. How in the midst of such environments a man of such transcendent genius, towering personality and far-seeing vision like the great Reformer could spring up is not easy to explain. To give a twist to the mentality of the Hindu mind fed for two thousand years or more on mere metaphysical

⁴ K. .P Bandopadhyya : *Nababi Amal* (The Times of the Nababs of Bengal).

pabulum was by no means an easy task, nor could it be effected in a day. Among the Brahmins alone there are some two thousand divisions and sub-divisions, none of which will touch food cooked by the other, nor enter into mutual matrimonial relationship. Among the non-Brahmins in Bengal again there is a regular graded social hierarchy, some of which have the privilege of carrying and offering drinking water to those who are above them in the scale. Following the inoculation of the Hindu mind with western ideas at least two generations had to elapse before any tangible result could be achieved in the shape of that steadfast devotion to physical science, which alone can bring forth originality. The soil was rendered morally unfit and therefore had to be fertilised by the application of choice manures before it could be made to yield a crop of a different quality altogether. I have been digressing for some time in order that the reader may follow with advantage the dawn of a new era in Bengal.

CHAPTER XII.

DAWN OF A NEW ERA—ORIGINAL SCIENTIFIC RESEARCHES IN BENGAL—INDIANS DEBARRED FROM HIGHER EDUCATIONAL SERVICES.

Jagadis Chandra Bose, after graduating as an ordinary B.A. of the Calcutta University, had been sent by his father to Cambridge to complete his education at the great British seat of learning in 1880. He had the advantage of sitting there at the feet of Lord Rayleigh and of imbibing the traditions of the seminaries on the banks of the Cam. On his return to Calcutta in 1885 he was appointed a junior professor of Physics, his senior colleague being Sir John Eliot. It is a remarkable fact that for twelve years in succession the world knew nothing about him ; his students of course highly appreciated the experiments with which his lectures were illustrated. He was, however, by no means idle during this time. His fertile and inventive genius was called into play and he developed wonderful originality in connection with the Herzian Waves. In 1895 he read a paper before the Asiatic Society of Bengal entitled *The Polarisation of Electric Ray by a Crystal*. It appears that he had not then realised the importance of the new line of research he had hit upon. Copies of the reprints of the paper were sent to Lord Rayleigh and Lord Kelvin. Both these great masters of physical science at once appreciated the significance of Bose's work, the former had them reprinted in the *Electrician*, and the latter wrote expressing his wonder and admiration. At this time I also chanced to hit upon mercurous nitrite, the first paper on which was communicated to the Asiatic Society of Bengal, 1895.

Bose, as I said above, had discovered a practically unexplored field and as is the case with a pioneer, he reaped a rich and abundant harvest. One paper followed another in

rapid succession and most of these appeared in the *Proceedings of the Royal Society* of London. His reputation was now well-established. The Government of Bengal sent him on deputation to Europe and when at the meeting of the British Association of 1897 he exhibited his miniature apparatus constructed in his own laboratory at the Presidency College by means of which he determined the physical properties of electric waves, e.g. the index of refraction etc., he almost took the scientific world by surprise. It would be out of place here to follow in detail the subsequent directions of Bose's work on plant physiology, nor do I feel competent to do justice to his epoch-making researches on response in the non-living. I am concerned here with only one aspect—the world-wide recognition of the Indian scientist's contributions, and the moral affect it produced on the impressionable minds of the youth of Bengal.

In a free country the talents of a youngman find ample scope in almost every walk of life, but in a dependency and among a subject people the paths of an ambitious career are all but closed to him. There is no open door for him in the army and the navy. The only field in which the Bengali brain hitherto found full play was the legal profession. Forensic talents of a brilliant order had been developed in connection with this branch. The great-grandsons of those who had founded the modern school of logic (नव्यन्याय) at Nadia, and carried to perfection the dialectic skill, took to law as kindly as fish does to water. Logic chopping naturally gave place to legal quibbling. The quick-witted sons of the Gangetic delta found in the law courts which sprang up like mushrooms, a congenial occupation. All the best talents were diverted to it. Although the bar soon became overcrowded and starvation stared the junior men in the face, yet the lucky few at the top of the profession could always command high fees and hence the attraction for it. Some twenty years ago in my *Bengali Brain and its Misuse* I sounded the note of alarm and pointed out how the youth of Bengal was seeking economic ruin for him-

self and his fair province by the insane pursuit of one and the same profession to the neglect of several others. An eminent lawyer and political leader of note once bitterly exclaimed from his place in the Bengal Council that the law had proved to be the grave of many a promising career.

It was at this critical period in the history of the intellectual development of Bengal that Bose's achievements found full recognition in the world of science. Its moral effect on the youth of Bengal was at first slow, but none the less most pronounced. A career in the Education department was hitherto almost shunned by young aspirants. As stated before the superior branch in the service was virtually a close preserve for Europeans, barely one or two Indians, distinguished graduates of British Universities, after the most frantic efforts had found admission into it. The educational Service had now been reorganised and a separate, but subordinate, branch was created which was meant for Indians ; the higher branch, the Indian Educational Service, being practically reserved for Europeans. The poor prospects thus held out to Indians had the effect of scaring away brilliant and meritorious men. I may cite here one instance.

Asutosh Mukerji because of his brilliant academic career and early indications of mathematical talent was sent for by Sir Alfred Croft, Director of Public Instruction, who offered him a post as assistant professor, carrying an initial salary of rupees two hundred and fifty per month. This was the maximum amount which the local Government was entitled to sanction. Had he in a moment of weakness or indecision accepted the offer it would have been the marring of his career. In the ordinary course he would have risen to the highest grade of the Provincial service, practically earmarked for Indians, with a pay of rupees seven hundred to eight hundred, after twenty five years' service. But the remuneration is the least part in consideration. As a government servant he would have been gagged from the very beginning and his talents would have found very little scope. That manly and sturdy

independence which characterised his later career would have been nipped in the bud. The comparative freedom from bureaucratic withering influence which our university enjoys would have been reserved as a dream of the future and, not to speak of the College of Science, post-graduate research work, which is the peculiar characteristic of the Calcutta University would not have flourished.

At the Twelfth Sitting of the Indian National Congress held in Calcutta, December 1896, the late A. M. Bose was entrusted with the Resolution namely "that this Congress hereby records its protest against the Scheme of re-organization of the Educational Service, which has just received the sanction of the Secretary of the State, as being calculated to exclude natives of India". In the course of his masterly speech the orator observes :

"And Sir, let me tell the authors of this Scheme that as regards the inauguration of this backward policy in the great Educational Service of the country, they have selected a very inopportune moment indeed. Why Sir, I should have thought that if the gracious words of Her Gracious Majesty's Proclamation, which is the Charter for our rights, are to be belittled, if those solemn words still ring in our ears which granted equal rights and equal privileges to all classes of Her subjects, irrespective of race, colour or creed, are to be violated and to be departed from, then the task would be attempted not in the sixtieth year of Her Majesty's reign which we in India are preparing to celebrate, and the coming of which has filled with joy and rejoicing the mind of all Her subjects in the vast Indian Empire. Let them not select this present year of Her Majesty's beneficent and benignant rule for initiating this retrograde policy. There is, Sir, another reason also which emboldens me to say that they have been specially unhappy in the selection of their time. Why Sir, we know the *London Times* has only the other day borne testimony to the fact that the year 1896 is an epoch-making year as regards the intellectual advance of India. We know that the grand researches of an Indian Professor in the field of invisible light, in the sublime and giddy heights of ethereal vibration, have led to discoveries which have filled the mind of Lord Kelvin, the highest authority which England has produced, literally with wonder and admiration. We have heard of the great and wonderful feat that another countryman of ours has achieved in the last great

competition for the Indian Civil Service. We know of the discoveries which also in the present year of grace have rewarded the genius and the patient toils of another countryman of ours in the realm of Chemical research. The present year then, when India has shown that she has not forgotten the traditions of her glorious past, when the Indian mind has awakened to the consciousness of the great destiny before it, and not only awakened to that consciousness, but has taken the first practical steps towards obtaining its recognition from the generous scholars of the West, surely is not the time or the season for ushering into existence a policy of this retrograde character. We shall not, so far as in us lies, permit, without protest at any rate, the inauguration of such a policy. It is, gentlemen, rather late in the day for this unhappy policy, for this creation of a new crime of colour, for this infringement of the gracious words of Her Majesty's Proclamation.

Gentlemen, there is one other observation I have to make, and that is this. If I have dwelt on the nature of this policy, on what I may venture to describe, with all respect, as its audaciously retrograde and un-English character, if I have dwelt upon that, it is only right that I should draw your attention to a small word that occurs in the sentence I have placed before you. That sentence, as you know, is 'In future natives of India who are desirous of entering the Education Department will usually be appointed in India, and to the Provincial Service.' Perhaps the framers of the Resolution thought that there was a great deal of virtue in that saving clause 'usually'. But I will venture to prophesy, I will undertake to say, what the result of that 'usually' will be. Not that the mantle of prophecy has fallen upon me, or that the gift of the seer has been vouchsafed to me. But, gentlemen, the past is a guide to the future and lightens up the dark places of much that is yet to be. Let us consult that guide. As I have said, my facts specially refer to Bengal, and this is what we find in that Province at the present time. I will not attempt to carry the meeting back with me to distant days. But confining our view to the time which has elapsed since the birth of the Congress, what I find is this:—that within the last twelve years there have been six appointments of Indian gentlemen educated in England, and educated successfully so far as all the tests there are concerned. These six gentlemen who have been appointed to the Education Department in these years, have *all* of them been appointed in India. Not that they did not try to get appointed in England. No, gentlemen, after taking their degrees in the great English and Scotch Universities, after having won all their high distinctions—distinctions not less high than those of their English brethren in the Service, in some cases perhaps even higher—they

tried their very best, they made what I may almost describe as frantic efforts at the India Office to get an appointment from England. But all their efforts were in vain. After waiting and waiting, and after heart-rending suspense, they were told that they must ship themselves off, as soon as they could, to India for the Government to appoint them there. Therefore, although there is that phrase 'usually', you may take it that that will happen in the future, which has in these years happened in the past; and happened too so far as we are aware, in the absence of this retrograde clause now authoritatively laid down in the Resolution. . . . For all practical purposes you may take it, gentlemen, that 'usually' in the sentence means 'invariably' and the door is now closed against the entrance of our countrymen into the higher branch of the Service.

I cannot venture to detain the meeting any further. I have already passed my allotted limit of time. I will therefore conclude with only one more remark. There is no cause which can be dearer to the members of the Congress than the cause of education. You, gentlemen, are the fruits of that education, of that great awakening of the national mind to which I have referred. And can it possibly be that you will for a moment neglect to do all that you can, all that lies in your power—with the help of our friends in England and in India, with the help of all those, wherever they may be, who look forward to human progress as a thing to be wished for, as a thing to be fought for—to see that your children are not ostracised from those higher branches of the Service with their higher opportunities of educational work and educational progress, to which, up to now, they have been appointed. There are no considerations such as those which are sometimes supposed, be it rightly or be it wrongly, to apply to appointments in the Indian Civil Service, which can have any application to those in the Educational Service of the country. What possible shadow of a shade of justification can there then be for this enlarged and expanded edition of the policy of exclusion? Gentlemen, I believe in the intellect of India. I believe the fire that burned so bright centuries ago, has not wholly died out. I believe there are sparks, aye, more than sparks, that still exist, and only require the gentle breeze of sympathetic help, of judicious organization and kindly care, to burst forth once again into that glorious fire which in the past illumined not only this great continent, but shed its lustre over other lands—into that intellectual life which achieved wonders in the field of literature and arts, in the field of mathematics and philosophy, which produced works which are even now the admiration and the wonder of the world. Fight with redoubled vigour in that cause, and then we may depend upon it that in the Providence of God, righteousness and

justice shall triumph, and this attempt to fix on the brows of the people of this ancient land a new stigma and a new disability shall fail as it deserves to fail”.

Here I must pause for a moment to narrate an incident which has had a far-reaching consequence on my future career. The long looked-for “Reorganisation Scheme” had at last received the sanction of the Secretary of State for India and I was placed in the proper grade in the cadre. As a comparatively senior officer with superior qualifications I was asked to leave my College—the scene of all my activities—and join Rajshahi College as its Principal. To many a Principalship of a first grade college which involves executive power as also free commodious residential quarters is regarded as a coveted prize post. The charm of wielding executive authority is so innate in human nature that many a man of literary and scientific tastes and activities has been known to ruin his career and rust away. In those days, however, the moffusil colleges were ill-equipped and offered but poor facilities for research. Moreover, outside the metropolis there was no such thing as an intellectual atmosphere and as I was collecting materials for my Hindu Chemistry the Library of the Asiatic Society of Bengal was indispensable. But the most vital objection was my aversion to executive work. The basketful of correspondence with the clearing of files as also attendance at Committee meetings involves such a heavy taxation on time and energies that very little leisure is left for research work and study. I therefore respectfully represented to the Director of Public Instruction, Dr. Martin, my unwillingness to leave Presidency College, where as a member of the Provincial Service I would gladly serve as a *junior* Professor. My representation received a sympathetic response as within a few days the following notification appeared in the Calcutta Gazette.

“Dr. Martin thinks that this proposal, if sanctioned, will probably lead to embarrassing consequence. * * * * *

He sent for Dr. P. C. Rây to tell him that he might possibly

be called upon to leave the Presidency College. The intelligence was received with consternation, and Dr. Martin knowing that Dr. Rây is a distinguished Chemist engaged in original research in the Presidency College, after weighing the pros and cons, decided that the idea ought to be abandoned.
* * * * * The Lieutenant-Governor agrees in thinking that no hard-and-fast rule can be laid down in the case of several of the officers referred to."—*Govt. Resolution* No. 1244, dated 26-3-1897.

The flower of our youth as I said above was looking to the legal profession for the fulfilment of their aspiration, but the bar was already getting overcrowded and the chances of success in it were precarious. Although from the worldly point of view the Education department did not open up gorgeous vistas, it was now proved that one could make discoveries by steadfast devotion to a branch of science and thereby earn fame.

CHAPTER XIII.

ORIGINAL RESEARCH—RESEARCH SCHOLARS— INDIAN SCHOOL OF CHEMISTRY.

It has already been pointed out that my humble work was also gradually winning recognition abroad. The foundation of research scholarships by the Government of Bengal also helped the movement to a certain extent. A student who passed the M.Sc. with credit and who showed aptitude for a branch of science could now on the recommendation of his Professor secure a scholarship of Rs. 100/- per month tenable for three years. From 1900 on one scholar was always attached to my department, who, in the early probationary stage, co-operated with me in my line of research but later on was allowed to develop in his own way and strike out a line of his own. In this manner some of these scholars were enabled not only to secure Doctorates on presentation of theses, but also won the blue ribbon of the Calcutta University—the Premchand Roychand Scholarship. These also found ready employment in either the Educational Service or in some of the technical departments of the Imperial branch ; moreover, the fact that their papers began regularly to appear in the Chemical Journals of England, Germany and America acted as an incentive to the pursuit of Chemistry for its own sake.

The first research scholar under me was Jatindra Nath Sen, who won the Premchand Roychand scholarship. He collaborated with me in my investigations on mercurous nitrite. He entered the Agricultural Institute at Pusa and was in due course admitted into the Imperial Branch of the service.

Later on (1905) Panchanon Neogi was the research scholar under me and a little later Atul Chandra Ganguli, who was my lecture-assistant, also joined me. The latter was of robust

constitution and could labour hard even after his day's duties. He used to begin his appointed task about half-past four in the afternoon and carry it on till late in the evening; during the holidays he was often constantly by my side for hours together. Another young man, Atul Chandra Ghosh, also co-operated with me as a research scholar and rendered me valuable help. He left me to take up an appointment as Professor of Sirdar Dyal Singh College, Lahore, but his life was prematurely cut off, much to my regret. Professor S. S. Bhatnagar who has earned a well-merited reputation in Physical Chemistry has often reminded me that he had his novitiate in chemistry under Ghosh and therefore claims to be my chemical grand pupil.¹

The output of research thus went on increasing as anyone who would take the trouble to glance through the indexes of chemical journals giving the names of authors will readily find.

About 1904 a young Irishman entered the Education Service and was posted at the Presidency College as an additional professor of Chemistry; he rendered valuable service to the cause of scientific progress in Bengal. He was an enthusiast and utterly devoid of narrowness and petty jealousy. In his lectures he often used to say that it was a curious anomaly that he—a very junior man—should be officially regarded as "Senior" being a member of the "Indian Education Service" (ante pp. 154-158), though he could learn at the feet of the man ranking as his "junior."² He actively and openly sympathised with

¹ Professor Bhatnagar in his inimitable humorous vein observes :

"The one atrocious crime which I have committed and for which, I am sure, I have not been forgiven by Sir P. C. Rây, is that I am not his pupil. My defence is that I was not born early enough and hence I happen to be a grand pupil of his, having received instruction in Chemistry from the late Mr. Atul Chandra Ghosh, one of his earliest pupils. (*Presidential address delivered before the Chemistry Section of the Indian Science Congress, January, 1928*).

² This sort of invidious distinction based upon racial and political considerations found echoes both in the Provincial and Imperial Councils. Cf. "In the Education Department, for instance, Indians were on terms of equality with their English colleagues before the creation of a

Indian aspirations. Under the new university regulations the B.Sc. and M.Sc. degrees had just been instituted and he did his best to improve the efficiency of the laboratory teaching not only at the Presidency College but throughout the colleges of Bengal. He helped Ashutosh Mukerjee with his advice in University matters and made friends with many educationists and politicians in Bengal. The Bengal Chemical and Pharmaceutical Works, the factory of which had recently been removed to Maniktola Main Road and was then under construction, was a special object of affection to him. It represented according to him the best fruits of indigenous talents and enterprise. Unfortunately, his zeal sometimes outran his discretion and he got into scrape on this score. It appears that he wrote a private letter to a member of Parliament criticising Sir Bamfylde Fuller's methods at Barisal and in East Bengal in general. This letter was naturally but injudiciously shown

Provincial Service. The scale of salary was, no doubt, two-thirds but in other respects they were on equal terms. But they have now been put into a distinctly subordinate position and we see on every side the most flagrant cases, which hurt everybody. Thus we find men of most distinguished attainments in the Provincial Service simply because they are Indians, and men who passed their examinations only yesterday, and who have so far earned no distinction by their work, in the Imperial Service, simply because they are Europeans. I will give only one instance. There is a gentleman here in Calcutta, named Dr. P. C. Rây, a most distinguished man of science, a man who has been honoured by French and German savants, a man adored by his pupils, a man who has been doing original work for the last 20 years and more. But he is still in the Provincial Service whereas young men, fresh from College, without any original work to their credit, men who are admittedly his inferiors, are brought out to this country and put over his head, simply because he happens to be in the Provincial Service and they are brought out as members of the Imperial Service. Now, Sir, this sort of thing hurts not merely the men who are actually affected by it, it hurts the students studying under them. In other departments any injustice done to an Indian official concerns that official only. In the Education Department it affects the students as well; the bitterness passes from the professors to the students, and the whole student community comes to be affected by it.—G. K. Gokhale on "The Employment of Indians in the Public Service" (1911) : *Speeches* (Natesan), p. 448.

to certain other members of Parliament well-known for their pro-Indian proclivities and as ill-luck would have it a member of the India Council, evidently a retired Anglo-Indian bureaucrat, got a copy of it and showed it to the Indian Secretary. In regular course the Director of Public Instruction, Sir Archdale Earle, had to deal with this matter.

Poor Cunningham was sent for by Sir Archdale and severely reprimanded for the breach of official discipline. He was told that he deserved to be instantly dismissed for his conduct and the least and most lenient punishment that could be meted out to him was that he should be at once removed from his sphere of mischief-making. He was transferred to Chota-Nagpur, a backward region and away from the active life in Calcutta where he would be harmless as an Inspector of Schools. He died at Ranchi of a bad type of fever in 1911. A tablet on the wall of the staircase of the Baker laboratory raised by his numerous admirers and pupils attests the affection and regard in which he was held.

In March 1908, a memorable event happened in connection with the Calcutta University. By a charter in 1858, Lord Canning had incorporated the Universities of Calcutta, Madras and Bombay. The jubilee of the fiftieth anniversary of its foundation was celebrated with due eclat and several social functions held and honorary degrees conferred.

At this time I began to feel that I was under an obligation to the public to present to it the promised second volume of my *History of Hindu Chemistry*. Accordingly I resumed my study of some new MSS. of Sanskrit alchemical Tantras which had come into my possession. I was also fortunate in securing the co-operation of Dr. Brajendranath Seal whose encyclopædic knowledge was equal to the task of contributing the section devoted to the atomic theory of the ancient Hindus. This portion was subsequently re-cast and enlarged by the learned author into a volume entitled "*The Positive Sciences of the Ancient Hindus*."

The following extract from the preface to the second

volume will give the reader an idea of the feelings which agitated my mind when I bade farewell to my self-imposed task, which was indeed a labour of love.

"It is with mingled feelings that I mark the hour of my final deliverance from a self-imposed task which has occupied all my spare time during the last 15 years and more, feelings not unlike those which overpowered the historian of the Roman Empire. The reader will, I hope, forgive me if I venture to give expression to them in the words of Edmund Gibbon himself. 'I will not dissemble the first emotions of joy on the recovery of my freedom. * * * But my pride was soon humbled, and a sober melancholy was spread over my mind, by the idea that I had taken an everlasting leave of an old and agreeable companion.'

"The Hindu nation with its glorious past and vast, latent potentialities may yet look forward to a still more glorious future, and, if the perusal of these pages will have the effect of stimulating my countrymen to strive to regain their old position in the intellectual hierarchy of nations, I shall not have laboured in vain."

Prof. Sylvain Lèvi in the course of his review of the second volume in *Journal Asiatique* observes :

"His Laboratory is the nursery from which issue forth the young chemists of New India. Prof. Rây is an excellent Sanskritist. * * * * he is familiar with the languages of the West and is quite at ease with works written in Latin, English, German and French."

Once more Chemistry claimed me as her own by which I mean that I was at liberty to devote my attention and energy exclusively to the object of my first love. Any one who would patiently go through the list of the contributions from the chemical laboratory of the Presidency College will find that henceforth several of them began to appear under the joint authorship of myself and my pupils as co-workers and this feature began to come into prominence. When another person is taken into partnership the best policy is to repose full confid-

ence in him and to allow him to reap the due share of the harvest gathered. The partner soon learns to identify his interests with those of his principal and works whole-heartedly. Nay more. There are several ways of looking at things. A man who works unaided and who does not care to consult others or accept any one else's suggestions is apt to be crotchety or even possessed with obsessions; if however, he invites the suggestions of his own employees he can avoid many mistakes. The latter, realising that they are in the confidence of their master, thereby acquire a sense of responsibility, which would not be the case if they were taught simply to carry out the behests of their superiors. In short, the relation between the master and the servant in the latter case grows to be simply mechanical. Of course I am speaking of ordinary men and not of supermen. It should however be remembered that under the shadow of a towering genius or personality men of ordinary or average gifts cannot grow, just as under the shadow of the outstretching branches and ramifications of a gigantic banyan tree vegetation is only of stunted growth. In the world of business too the same considerations apply, and what applies to business would apply more or less to research in the laboratory. A volume might be written on the eminent men of science produced by their accidental contact with a master-mind and the opportunity they obtained thereby of not only catching his inspiration but also of working in sympathetic co-operation with him. The following extracts from my *Makers of Modern Chemistry* will make the point clear.

"Gay-Lussac's friend and co-worker was Thenard (Louis Jacques). Thenard (1777-1857) was the son of an ordinary peasant. At the age of seventeen he came to Paris to study medicine. As his means did not permit his joining a laboratory as a student he asked Vauquelin for a place as a laboratory servant. Thenard rose to fame with the discovery of the well-known compound, "Thenard's Blue". Hydrogen peroxide was also another of his discoveries. He died at the age of eighty as a peer of France and Chancellor of the University

of Paris. Among the poor pupils of Vauquelin at Paris was Michel Eugen Chevreul (1786-1889). He forms practically the connecting link between the founders of Organic Chemistry and many of the present generation of chemists as he lived to be more than a centenarian. His researches on the fatty acids are too well-known to require repetition here".

"Aguste Laurent (1807-53) was the son of an ordinary peasant. In 1826 he became an external student at the School of Mines and in 1831 assistant at the *Ecole Centrale des Arts et Métiers* of which Dumas was professor and in whose laboratory he carried on his first investigations. In 1838 Laurent became professor at the Faculty of Science at Bordeaux. He came back to Paris in 1846 and became assayer at the mint, but his income and opportunity for work were very limited and he was always in straitened circumstances. He died of tuberculosis in 1853. His biographer Grimaux writes of his unfortunate career in this strain: "He spent his life in constant labour in the disinterested investigation of truth, a prey to malevolent critics and coarse attacks. He knew neither fortune nor honour nor even the joy of seeing the triumph of the doctrines for which he had fought without relaxation".

Of course it does not mean that mere contact with a genius or a specialist or an opportunity to work under him will necessarily produce a prodigy. There must be a latent taste for the subject in the man and this potentiality has to be called into play. There is considerable truth in Gray's Elegy:

Full many a gem of purest ray serene,
The dark unfathomed caves of ocean bear.
Full many a flower is born to blush unseen
And waste its fragrance on the desert air.

It should not be forgotten, however, that the receiving apparatus must be attuned to the same pitch, otherwise there would be no response.

The year 1909 opened a new chapter in the history of chemical research in Bengal. In that memorable year some members of the brilliant group of students who were afterwards

destined to play a conspicuous part in notable research took their admission in the Presidency College. Jnanendra Chandra Ghosh, Jnanendra Nath Mukherjee, Maniklal Dey, Satyendra Nath Bose and Pulin Behari Sarkar enrolled themselves in the I. Sc. class ; while Rasik Lall Datta and Nilratan Dhar, who were senior to them by a couple of years or so, were preparing for the B.Sc. examination. Megh Nad Saha, who passed the Intermediate examination from the Dacca College, also joined Ghosh, Mukherjee and their fellow students in the B.Sc. class. Rasik Lall Datta, Maniklal Dey and Satyendra Nath Bose were born and brought up in Calcutta under their paternal roof. Ghosh, Mukherjee, Sarkar, Saha and Dhar, on the other hand, hailing from the countryside were residents in the Eden Hostel attached to the Presidency College and among them sprang up a friendship such as is rarely met with. They shared their joys and sorrows and their common purse. Although as yet scientists *in posse*, there was something indescribable in their character, which drew me to them. The bonds existing between them and me was as subtle as those of chemical affinity. I used to visit them often in their hostel rooms and they were my constant companions in my *maidan* walk in the evenings.

Rasiklal Datta, the oldest, showed remarkable aptitude for Chemistry and, while preparing for his M.Sc. examination, was associated with me in my investigation on the nitrites ; but he soon developed striking originality and submitted a thesis for his final degree examination, which was in due course published in the Journal of the London Chemical Society. From 1910 onwards he published several papers in rapid succession. To him belongs the credit of being the first Doctor of Science of the Calcutta University.

Sometime in 1910 a remarkable incident happened resulting in a precious "find". Jitendra Nath Rakshit had gone up for the B.Sc. examination from the St. Xavier's College but was "plucked". He got disgusted with the system of examination in vogue and relinquished the degree-hunting mania to

which our youngmen are so prone. As he could not under the existing circumstances enter an affiliated college, he worked for a time in the chemical laboratory of the National Council of Education. His *forte* lay in Practical Chemistry and glass-blowing. Out of a few bits of rejected glass-tubing he could improvise an apparatus, which hitherto could only be had from a firm in England or Germany after months of anxious waiting. His skill and abilities were brought to my notice by a friend of mine. I at once sent for him and within a short time realised that in him I had got a worker of rare gifts. He was associated with me in the isolation of the amine nitrites. He often used to toil for 9 hours on end—a common thing enough in the cold climate ; but in the trying, stifling atmosphere of Calcutta, with the thermometer often at the boiling temperature of ether, rather a hard task. He too in due course developed a capacity for original work, which secured for him within a year or two admission into the opium department of the Government of India as analytical chemist. His isolation of the alkaloid *porphyroxine* redounds to his credit.³ He has contributed about 40 papers. His method of estimation of morphine and codeine has found a place in treatises on Analytical Chemistry.⁴

In 1910-1911 I had a unique experience. During the monsoon season a large portion of Bengal in the deltaic area becomes flooded, such portions being on the whole free from malaria ; in fact it has been found by experience that the more an area is flooded, the greater the immunity from this fever. There are however other regions, not subject to floods where big pools of water accumulate for want of proper drainage and

³ Vide *Journ. Chem. Soc.*, 1919, Vol. 115, p. 455 ; also *Berichte*, 1926, Vol. 59, (B), p. 2473.

⁴ "The Analysis of Drugs and Chemicals" by Evers and Elsdon, 1929 quotes Rakshit at length as an authority on the estimation of the alkaloids morphine and codeine. Rakshit's method of estimation of acetone in presence of methyl alcohol has been mentioned in Thorpe and Whiteley's *Manual of Organic Chemical Analysis*.

when the rains cease these stagnant sheets of water become fertile breeding grounds for mosquitoes and also give off miasmatic exhalations from the decay of vegetable matter. It has always been my custom to spend the dry month of May—a portion of the summer vacation—in my native village. This has enabled me as I have said above not only to indulge my love of rural life but also to come into close touch with my co-villagers and the peasantry all around. It happened however that during that year the monsoon or rather the pre-monsoon showers began much earlier. I was induced to prolong my stay till 15th of June so that I might take part in the prize-distribution ceremony of our school. I started for Calcutta the next day and immediately on reaching there got an attack of fever followed by periodic relapses. This state of things continued for nearly a year. A life-long invalid could not long be expected to resist such renewed attacks on his debilitated constitution. My friends naturally became anxious about my health and Dr. Nilratan Sarkar packed me off to his Darjeeling residence with a prescription containing seven grains of quinine per dose to be taken thrice daily. This change to a salubrious climate was almost the means of saving my life. I had almost forgotten all about this event in my life ; but the opportune publication of a letter at this moment in the Bengali Journal *Prakriti* (Nature) revives the recollection of it. The letter is reproduced below.

Darjeeling,
Glen Eden,
14. 6. 11.

My Dear Jiten,

Your card of the 12th instant has been very gratifying to me. In fact I was about to write to you enquiring of your work. You give me the percentage of 'C' and 'H' of C_3H_7 , NH_2 , HNO_2 but are silent about 'N' by Dumas' and Crum-Frankland method but I hope it is all right You may tell Hemendra that his method of detecting and quantitatively estimating methyl ether will find ample recognition at last.

I feel like a disabled General watching from a distance the thick

of the fight and his valiant soldiers marching triumphantly on. By God's grace the year of my illness has been crowned with most brilliant and unexpected results. You must go on giving evidence of the vitality of Indian intellect.

I am very glad to hear that Rasik's work is also progressing well. I hope shortly to hear from him about the isolation of allylamine nitrite and its decomposition product, allyl alcohol.

Last Friday and Saturday the weather was brilliant, warm and sunny. But then it rained incessantly for nearly three days, and since yesterday it has been again getting fine.

I am keeping well. Dharendra writes me from Germany and is happy in being allowed to take up his thesis for the Ph.D. But I feel convinced that yourself, Hemen and Rasik will prove to demonstration that equally good, if not better work, can be carried on here.

Yours sincerely,
(Sd.) P. C. Ray.

Jitendra Nath Rakshit,
Bengal Chemical & Pharmaceutical Works, Ltd.
91, Upper Circular Road, Calcutta.

I confess the contents of this letter had entirely faded out of my memory and I could not at this distance of time remember a word of it. It helps me also to put in a chronological order the slow evolution of the Indian School of Chemistry.

About this time another youngman was attracted to me ; he had passed the B.A. Examination from the City College with Chemistry as one of the subjects. He evinced a liking for Chemistry and enrolled himself as a student of the Presidency College for his final degree (M.A.) examination. His understanding was clear and he soon got a grasp of his favourite subject. He had also another qualification which is rather rare amongst our science graduates,—a sound knowledge of Bengali and English literature and could wield his pen as effectively as the test tube and for this reason has been sometimes of help to me in my literary undertakings. This was no other than Hemendra Kumar Sen. He was closely associated with me in my investigation on tetramethylammonium

hyponitrite and gave singular proof of the mettle he was made of. In analysing the gaseous products of decomposition of this substance he devised methods of his own, constructed out of simple apparatus. Sen is all the more entitled to credit as he had to earn his living by tuition and latterly as a part-time lecturer in the City College. His career was brilliant. He secured a first class in the final examination and also won the Premchand Roychand Studentship, which enabled him to proceed to England to complete his chemical education at the Imperial College of Science. There he equally distinguished himself and won the golden opinions of his professors. His thesis for the Doctorate of the London University, which was published later in the Journal of the Chemical Society is of high order.

Another youngman, a fellow student of Hemendra Kumar, also gave an equally good account of himself. He was of a reserved and even taciturn disposition. The truth of the adage, "still water runs deep", is well exemplified in him. Although he came out with flying colours in the M.Sc. examination and did some work conjointly with Sen, he matured rather late. This was Biman Behari Dey. I was struck with the close intimacy existing between Dey and Sen and often used to call them "Hamlet and Horatio" or "David and Jonathan". Dey went to England a couple of years earlier than Sen and carried on his researches in Organic Chemistry at the Imperial College of Science and got his Doctorate in due course. His papers on coumarin condensation mark him out as an investigator of repute.

Nilratan Dhar had by now taken his M.Sc. degree on the submission of a thesis in Physical Chemistry. That he secured the highest place in the examination goes without saying.

Although I always professed Inorganic Chemistry, I had taken care, since taking my Doctorate at Edinburgh, to keep myself abreast of the progress made in Organic Chemistry in its salient points. From 1910 or so I was accustomed to deliver a special course of lectures on Organic Chemistry to

advanced students keeping in view the historical development of the subject. Chemistry was getting so highly specialised and so rapid and gigantic were the strides made in its different branches and aspects that no one could now master more than one and even that only partly.

Take spectrum analysis alone. Since its elaboration by Bunsen and Kirchhoff, Ångström and Thalen, de Boisbaudron, Crookes and Hartley had devoted the best years of their lives to it. Since the discovery of radium again by the Curies quite a new branch of Chemistry has sprung up with its life-long votaries and the literature on the subject is already vast. When I was a student at Edinburgh Physical Chemistry was almost in the embryonic stage ; but thanks to the superhuman labours of Ostwald, Van't Hoff and Arrhenius, this branch has also grown to stupendous dimensions ; and a section of it, Colloid Chemistry, already bids fair to grow to appalling stature in the hands of such specialists as Wolfgang Ostwald, Freundlich, Zsigmondy, Svedburg, Kruyt, Rideal and, last but not least, Jnanendra Nath Mukherjee.⁵

When I was a student at Edinburgh, Physical Chemistry was really in making ; its great protagonist Svante Arrhenius was actually carrying out in Stockholm his experiments on the conductivity of solutions with respect to the electric current almost contemporaneously with my stay in Edinburgh. I well remember how the Swedish chemist in those days was assailed by the conservative school for his heterodox views ; nay ridicule was heaped upon him. In due course his bold theory received acceptance and even the approbation of the scientific world. His scoffers turned out to be his best admirers. Little did I then dream that less than one-third of a century later

⁵ The Faraday and Physical Societies held a joint discussion on "The Physics and Chemistry of Colloids and their Bearing on Industrial Questions". *Nature* (November 4, 1920, pp. 327-28) observes :—

"Perhaps the most important paper of the whole discussion, in that it represented a distinct advance in theory, was that by Mr. J. N. Mukherjee".

my beloved pupil, Jnanendra Chandra Ghosh, should go a step further and even modify to a certain extent Arrhenius' law of electrolytic dissociation in *dilute* solution.

By 1910 Physical Chemistry had begun to rear its head and claim a recognised position of its own, but even in England few, if any, universities had up till 1900 a Professor or Lecturer on it attached to them. To Nilratan Dhar belongs the credit of being the pioneer and initiator of the study of this branch in India. Not only did he choose it for his own line of investigation but he inspired J. C. Ghosh, J. N. Mukherjee and a few others in its pursuit. Dhar was awarded a State (Government of India) scholarship which enabled him to proceed to Europe and continue his research at the Imperial College of Science and at the Sorbonne. He secured with credit the Doctorates of both the London and Paris Universities on presentation of brilliant theses, which were published in due course. Before his departure for England, Dhar was associated with me in the study of the physical properties of the nitrites and in the determination of the vapour density of ammonium nitrite. He was also, side by side, carrying on his own independent researches.

In 1912 the Congress of the Universities of the Empire held its first Session in London. The Syndicate of the Calcutta University elected me and Deva Prasad Sarvadhikary as delegates to represent it.

During my presence in London I availed myself of the opportunity to read a paper on the vapour density of ammonium nitrite, which created some stir in the chemical world. In 1907 I had shown that ammonium nitrite, which hitherto had usually been described in the text books as theoretically present, could not only be isolated but sublimed in a vacuum. Following up the clue that a substance which like camphor sublimates would necessarily admit of its vapour density being determined, I now tried the experiment. I had been particularly anxious to finish it before I started for England and to take with me the results if they proved to be successful.

Fortunately for me Nilratan Dhar who was then in the making as a chemist was associated with me and another youngman Tincory Dey, who had just taken his final degree in Chemistry. The experiment demanded individual attention and watching for ten to twelve hours at a stretch for close upon two months, but so intense was the interest attaching to it that we forgot all about the duration of time involved and were on tip-toe of great expectation. When Dhar with the aid of his logarithm tables took to calculating the results at the close of every day's experiment I used to tremble with solicitude not unmingled with secret joy.

I read the paper at the Chemical Society before what may be called a bumper house. It created almost a mild sensation among the chemists. Sir William Ramsay warmly congratulated me. Dr. Veley followed in his happy mood.

"Dr. V. H. Veley in welcoming Prof. Rây said he was an illustrious representative of a great Aryan nation which had attained a high degree of civilisation and discovered many chemical processes when this country was but a dismal swamp. Prof. Rây has shown, contrary to text book statements, that ammonium nitrite could be obtained in a stable crystalline condition and volatilised. He concluded by paying a warm tribute to Dr. Rây and his pupils for their valuable researches on ammonium and the amine nitrites. The Chairman also extended on behalf of the Society, a hearty welcome to Prof. Rây endorsing Dr. Veley's remarks".—*The Chemist and Druggist*.

Roscoe who was now an octogenarian did not generally attend meetings ; when however he heard of the results, he exclaimed, "Good"! *Nature*, August 15, 1912 in noticing the paper, remarked as follows :—

"Prof. P. C. Rây has added to his success in preparing ammonium nitrite in a tangible form, a further accomplishment in determining the vapour density of this very fugitive compound".

The Congress of the Universities commenced its sessions

with an inaugural address by Lord Rosebery and the subject of the discussion on the first day was opened, I think, by Sir Joseph Thomson and several eminent speakers took part in the discussion which followed. Sarvadhikary who sat next to me urged me to say a few words on behalf of our own University. I hesitated and excused myself by saying that I grew nervous in the midst of a big assembly and as he was endowed with oratorical gifts the speaking affair should be reserved for him, and I was meant to be a silent member or a sleeping partner.

Sarvadhikari was inexorable ; he pointed out that the subject was one on which I could speak with authority and without waiting for my reply he wrote my name on a slip of paper and forwarded it to the Chairman. When my name was called I had to obey the Chair and ascend the dais and acquit myself as best I could. I barely spoke for five minutes and my short speech is reproduced below from the Proceedings :—

“I rise, my Lord, to associate myself with the weighty remarks made by my brother delegates from the Colonies, Prof. H. B. Allen (Melbourne) and Prof. Frank Allen (Manitoba).

“The Indian graduate also is placed under peculiar disadvantages when he undertakes to pursue his post-graduate studies in a British University. My Lord, I plead for a more generous recognition of the merits of an Indian graduate ; he has, I am afraid, the badge of inferiority stamped upon him simply because he happens to be an India-made ware. I can speak with some degree of confidence about the particular subject which I have the honour to profess, namely Chemistry. Now, of late there have been some brilliant students engaged in post-graduate researches and as their communications find hospitable reception in the columns of the leading British Chemical Journal, I take it that they are considered as of a fair degree of merit and yet it is a strange anomaly that when the authors of these investigations come over here and aspire for a high British degree, they are made to go through the trodden path in the shape of having to pass the preliminary examinations and this has a depressing and deterrent effect upon the enthusiasm of our youths. I think the suggestion made by a previous speaker that such a scholar should only be made to pass through a probationary period under the guidance of a teacher whom he chooses and if he fully satisfies him

the Colonial or Indian student should at once be allowed to go up for the highest degree on the strength of his thesis alone is a sound one.

"Sir Joseph Thomson has spoken about the rich endowments and scholarships required to encourage a post-graduate scholar. The Calcutta University has already founded a good few post-graduate scholarships and expects to have more. But I beg, however, to remind the representatives of the British Universities present here that we in India have from time immemorial held aloft the high ideal of plain living and high thinking and that with even comparatively poor stipends and bursaries we hope to achieve much.

"My Lord, I do not for a moment claim that the teaching our Universities impart is of the same degree of efficiency as in the sister British Universities—in fact we have much to learn from you—but I beg leave to remind you that in spite of their many defects and drawbacks, our Universities have produced some of the brightest ornaments of our country. The foremost lawyer of Calcutta—a man renowned throughout India for his high forensic attainments—is a graduate of the Calcutta University. Three of the most eminent physicians and surgeons of Calcutta, who have attained to phenomenal success in their professional career are, again, graduates of my own University and last but not least the present Vice-Chancellor of our University, who enjoys the unique distinction of being three times in succession elected to his onerous duties by the Chancellor of the University, who is no other than the Viceroy himself,—I say, Sir A. T. Mookerjee is also a product of the same University.

"My Lord, before I resume my seat I once more plead for a more generous recognition of the teaching imparted in our Colleges."

My brief speech evidently produced a good effect. When the sitting was over, the Master of Trinity—Dr. Butler—introduced himself to Sarvadhikary and me and invited both of us to be his guests when we should visit the University of Cambridge.

The first University I visited was this great ancient seat of learning. Sarvadhikary had preceded me by one day. When I reached Cambridge the Master with Sarvadhikary met me at the railway station and drove me to his quarters. After giving us some refreshments the Master conducted us to a room or rather a small museum of the Trinity College, where many precious relics have been preserved. If my memory serves me right, I think I saw a few pages of the MSS. of *L'Allegro*; then

there was the observatory or laboratory associated with the astronomical and optical researches of the great Newton.

Dr. Butler was an erudite classical scholar, genial and full of *bonhomie*. He reminded me of the *pandits* of our good old days. He related that in times past when the judges held their assizes at Cambridge, they and their numerous retinue used to take unceremonious possession of the kitchen and scullery of the Trinity College and thus make themselves comfortable and I believe it is still the custom to follow the quaint old practice. Then again when the King comes annually to Cambridge to see the Review he has to be the guest of Trinity. The Master in assigning us the rooms showed us an adjoining one which was being furnished for His Majesty's reception during his forthcoming visit.

The Congress overseas delegates had the option of selecting a number of British Universities to visit and they were received in these as guests. I chose some of the Northern Universities including that of Sheffield. As this was one of the youngest universities and not hallowed with the traditions of Oxford, Cambridge or Edinburgh, very few cared to include it in their itinerary. In my younger days Sheffield was known to me as the seat of Rogers' cutlery, which was then in extensive use in Bengal. The city has now grown to enormous proportions and importance—it is the seat among others of Vickers Maxim & Co. Sheffield had made ample preparations to give a right royal reception to the guests. As ill luck would have it I was the only guest to turn up in the morning. One funny incident I yet remember. When I got down at the station, the porter who took my luggage in the wheel-barrow told me that there was no need to take a taxi as a good many hotels were within a stone's throw. He asked me the name of the hotel where I wanted to put up. I had none to mention, but simply pointed out a modest unpretending one, which I thought good enough for me. "No, this is not for you", said he, and he shook his head. I surrendered myself to his judgment and he took me to a fashionable one near by. As

soon as I announced my arrival at the office of the University I found myself an object of unusual attention. All the professoriate including the Vice-Chancellor (Prof. Hicks) gathered round me and I was shown over the various departments. They met me at lunch as their guest in the very hotel where I was lodging. In the evening there was a splendid function. A grand banquet was held at the Town Hall and the Master Cutler proposed my health and coupled with it that of another guest from Canada. This delegate had arrived sometime in the afternoon or evening. I was thus throughout the day sole recipient of the princely hospitality and this explains why I said that it was my "ill luck" to be the solitary guest. Being of shy disposition I always feel awkward when attending ceremonials.

In London also the worshipful Fishmongers' Company invited the guests to its banquet. This, as also the Vintners' Company, the Merchant Tailors' Company, etc., are immensely rich and their existence dates from a long time past. The cost of these Gargantuan meals appeared to us Indians fabulous. Speaking of a dinner at the Fishmongers' Company, Macaulay writes: "They had got at one time to dining at ten guineas a head" (*Life*, vol. i p. 337). Again: "The first Company for gourmandise in the world"—*Ibid*, p. 336. These companies hold lands in the city and elsewhere, the price of which has jumped up a thousandfold. The *menu* consists of eleven courses or more and each course, commencing with the soup, is followed by a delicious wine, the date of the vintage being given. The wines are taken out of the cellars where they have been matured for half a century or more. Many quaint old customs are observed on such occasions, e.g., the passing of the cup of love. In the good old days, during these wassails they used to get dead drunk and not being in their senses sometimes used even to stab each other. The cup was a huge metallic receptacle filled with wine and each guest was to sip a little and pass it on to his next neighbour as a sign of peace

and good-will. Being a teetotaler I simply brought the cup near my lips and handed it on.

As a delegate of our university to the 250th anniversary of the Royal Society, which synchronised almost with the Session of the Congress, I attended also several of its functions. The Lord Mayor of London gave a grand banquet to the members of the Royal Society and the delegates at the Guild-hall on this historic occasion and I had thus an opportunity of partaking of his hospitality. The King also held a reception at Windsor Palace which was thrown open to his guests. The extensive green lawn stretching as far as the eye could reach and the long avenue of trees naturally called forth my admiration.

Dr. Biman Behari Dey who after taking his M.Sc. from the Presidency College was then preparing for his Doctorate was most attentive during my stay in London and acted as my friend and guide. At this time I received a letter from the late Asutosh Mukherjee, which was fraught with momentous consequences and was full of hopeful augury for the future, in that it foreshadowed the foundation of the University College of Science. The letter is reproduced below.

Senate House,
Calcutta.

The 25th June, 1912.

My Dear Dr. Rây,

It may be in your recollection that on the 24th February last, when the question of the establishment of University Professorships was before the Senate you expressed your regret that no provision was made for a Chair of Science. I assured you, on the spur of the moment, that a Chair of Science might come sooner than you expected. You will be pleased to hear that my prophecy has been literally fulfilled and that what was your ambition and my ambition has been realised. We have founded two Professorships, one of Chemistry, the other of Physics. We have also decided to establish at once a University Research Laboratory. All this we are able to do by reason of the munificence of Mr. Palit, supplemented by a grant of two and a half lacs from our Reserve Fund. The whole position is explained in the statement I made before the Senate last Saturday; a copy is enclosed herewith. I have now great pleasure in inviting you to be the first University

Professor of Chemistry, and I feel confident that you will accept my offer. I need hardly add that I shall arrange matters in such a way that you be not a loser from a pecuniary point of view. As soon as you return, we shall, with your assistance, prepare plans for the proposed laboratory, and begin to build as early and as quickly as practicable. It would be an advantage, if before your return, you could make time to see some of the best laboratories in Great Britain or on the Continent.

I was delighted to find that you had been made a C.I.E. but I feel that it might have come ten years earlier.

I hope you are quite well and have profited by your visit to England.

Yours sincerely,
ASHUTOSH MOOKERJEE.

I have not preserved the reply I gave, but as far as I remember I wrote to the following effect: "I look upon the proposed College of Science as the realisation of the dream of my life and it will not only be my duty but a source of gratification to me to join it and place my humble services at its disposal". On my return to Calcutta I saw Asutosh Mookerjee and promised my whole-hearted support to the scheme of the Science College and signified my intention to join it as soon as it was started. In the meantime Dr. Prafulla Chandra Mitra was deputed to visit all the important laboratories in India with a view to draw up a plan for the College of Science. He was a former pupil of mine and after taking his final degree in Chemistry had gone to Berlin for an advanced course of study in Organic Chemistry and had just returned with his Doctorate, *cum laude*.

In 1912 on my return from England as a delegate to the Congress of the Universities of the Empire, my colleagues and the students were "at home" to receive me. Mr. James in addressing the gathering in the course of his speech observed:

"To give a full and detailed account of Dr. Rây's work as a man of science would take much longer time than suits this occasion. Four main heads are easily noticed. The first is Dr. P. C. Rây's chemical discoveries, the original investigations by right of which he takes his recognised place among chemists, next there is his work on the History of Hindu Chemistry, which is the standard work on the subject and has made known to the world of science and of letters exactly what and how considerable were the attainments of ancient India in Chemistry.

Another achievement of his which ought very specially to be remembered is the establishment of the Bengal Chemical & Pharmaceutical Works, an important and successful industrial enterprise. It is everywhere recognised that one of the greatest needs of the time for all India and for Bengal in particular is industrial development. Dr. P. C. Rây is not a businessman, but a man of science; but where businessmen have failed, he has helped to found a really successful industrial enterprise. And whereas he has contributed to the enterprise the best he had to give, his knowledge and genius for Chemistry, and done so much to make it a commercial success, he has left it to others to draw the dividends. There is one other achievement more which I think is the greatest of all: Dr. Rây has trained and is training in his laboratory, that is in the laboratory of ours here, a band of young chemists to carry on the work he has begun, so that a distinguished French Professor has written of that laboratory as *the nursery from which issue forth the chemists of new India.*”—Presy. Coll. Mag.

It made me almost blush to hear such flattering remarks; if I quote them at all, it is only to show that though Mr. James was a literary man, he was fully alive to the importance of the work going on in the scientific departments.

CHAPTER XIV.

INDIAN SCHOOL OF CHEMISTRY (*Contd.*)—RETIREMENT FROM THE PRESIDENCY COLLEGE—THE WORK OF PROF. WATSON AND HIS PUPILS—RESEARCH STUDENTS— INDIAN CHEMICAL SOCIETY.

I went on as usual with my work at the Presidency College. J. C. Ghosh, J. N. Mukherjee and Megh Nad Saha were now in the making. Datta's and Dhar's contributions were being referred to by workers in the same field abroad and this recognition no doubt acted as a stimulus to their successors in our department. More and more advanced students were being attracted, who felt impelled to take up a piece of research in lieu of book-learning. Amongst them Maniklal Dey, F. V. Fernandes, Rajendra Nath Dey deserve special mention. Some of them have been joint as well as independent authors of papers.

In August 1914 the great war broke out. Its effect on our chemical laboratory was instantly felt in the cutting off of supplies of chemicals. Fortunately, the foresight of our veteran Demonstrator, the late Chandrabhusan Bhaduri, had provided an ample supply of chemicals in our store. The accumulations of the remnants of the stock of several years past were considerable and we could draw on them as on the reserve fund of a company in lean years. We were however driven to the necessity of preparing some special reagents for our researches and this proved to be a blessing in disguise as beginners in the field of research were thus initiated into the technique of certain processes in chemical industry.

In 1916 another young man of wonderful energy, pluck and perseverance joined my laboratory. This was Prafulla Chandra Guha. He had just passed the B.Sc. from the Dacca College with Honours in Chemistry. Under ordinary circumstances he would have worked under Professor Watson ; but

as the latter had gone home on furlough Guha found himself nearly stranded. In despair he wrote to me almost in piteous terms saying that his future career was about to be cut short abruptly and expressing an ardent desire to work under me. I welcomed him to my laboratory and thus began a happy and fruitful partnership. Guha was indefatigable in his labours and had a happy, instinctive insight into the mechanism of reactions. I had now taken up the sulphur derivatives of mercury nitrite and he proved to me to be a God-send. In collaboration with him I published two papers, but he was not long in striking out a path of his own. He has made substantial contributions on the Chemistry of sulphur compounds and has pointed out the untenability of the formulæ of some of these as proposed by such veteran predecessors in the field as Freund, Arndt and Busch and has earned their congratulations. In due course he came out with flying colours in his academic career also. He secured the first place in his M.Sc. and three years later his Doctorate and was also awarded the Premchand Roychand Scholarship.

Now a new chapter was about to commence in my career. The Presidency College was the scene of the labours and activities of the best period of my life. For more than quarter of a century I had lived and moved and had my being in its Chemistry class-room and laboratory and I was now called upon to bid farewell to them. Every nook and corner there was reminiscent of my past career. But before I take leave of my College, I must not fail to do justice to the claims of the late Principal H. R. James.¹ He was specially recruited

¹ Reuter has recently (1931) announced the death of Mr. James. At my request an ex-colleague of mine at the Presidency College, Dr. Aditya Nath Mukherji, who was in intimate touch with the deceased has supplied me with the following tribute:—

“A genial personality, a finished scholar, the type of an English gentleman, a warm friend and an affectionate comrade, the late Mr. H. R. James will ever be remembered by those—his brother-officers and his pupils—with whom he came into contact. As an educationist, his principle was efficiency and thoroughness: he was not so much anxious to cover a large field indifferently, as to take up a small area

for the Bengal Education Service and was a fellow of Balliol College, Oxford. His scholarship was of a high order and his outlook wide. His aim was to make the Presidency College the premier institution in the land in reality and not merely in name.

I have already said that the research scholarship to a certain extent helped to advance the cause of research. But this statement must be accepted under certain limitations. It is a singular fact that with the exception of one or two almost all the brilliant pupils of mine who have earned a European reputation were non-research scholars. After taking their M.Sc. degrees on the presentation of their theses they stuck to their work without any adventitious help. One who has really imbibed a spirit of research and acquired a true love of a subject cannot be expected to give it up simply because he has not been able to secure a scholarship to enable him to pursue it. Sir William Ramsay once declared that scholarships sometimes have the effect of an offer of bribes. The holder of it, assured of a fixed income for say, three years, takes to research in an easy-going fashion, while his heart is really elsewhere and he is preparing himself for what he thinks to be a more lucrative career. Such a one turns out to be a deserter as soon as an opportunity presents itself. Many such instances have been familiar to me. But one who has got the true call for research

and cover it well and efficiently. He loved to meet his pupils outside College hours as his comrades on a footing of perfect equality. The addresses which he gave in the College and in the Eden Hindu Hostel were expressions of his warm love and burning enthusiasm. He had an exalted conception of his duty, and as Principal of the Presidency College, he steadily kept before him the ideal which in a sense consumed him, *viz.*, to make that College the premier College in the province. The splendid structures known as the Baker Laboratories and the extensive open grounds which command an uninterrupted view from the College Street to the Chittaranjan Avenue bear evidence of the measure of success he was able to achieve.

Bengal is thankful to have received the services of such a scholar, and only wishes that he had been given larger opportunities for realising his splendid vision."

will cling to it, come what may. If he is not at all well off he will earn his livelihood by private tuition in the morning or evening but devote all his spare time to his work in the laboratory. Emerson very aptly says; "Has he (man) not a calling in his character? Each man has his own vocation. The talent is the call." He who has no internal vocation for research should not take to it merely because a scholarship is dangling before his eyes.

Rasik Lal Datta, Nilratan Dhar, Jnanendra Chandra Ghosh, Jnanendra Nath Mukherjee were not research scholars at the Presidency College, but all the same they were allowed to continue their work after taking their M. Sc. Principal James was often heard to say that it was a privilege on the part of the college to have such distinguished *alumni* attached to it for sometime to come and used to take a legitimate pride in them and their work.

At this time it began to be noised about that a School of Chemistry was at last in the making. As I have already said the researches of Datta, Rakshit and Dhar were found to be referred to in the chemical journals of England, Germany and America by workers in the same field and this caused me no little inward satisfaction. One day, shortly after my return from England, the Director of Public Instruction of Behar, I think Mr. Jennings, happened to pay a visit to the chemical department. In the course of a conversation on various topics he incidentally said: "I believe you have been instrumental in founding a school of Chemistry". This was perhaps the first occasion on which I had this fact brought home to me and the impression it created has not yet been obliterated from my memory.

Nature was not slow to recognise this fact; in its issue of March 23, 1916, it observes:

"In connection with the University of Calcutta, 'extension lectures' are being delivered, and that on January 10, by Dr. P. C. Rây, the Dean of the faculty of science of the University, is before us. The lecture consists of a brief resume of original chemical researches carried

out in Bengal in the last twenty years, and as an appendix a list of 126 papers contributed to various societies, such as the Chemical Society, Journal of the American Chemical Society and others, is given. Some of these papers are of very considerable value and interest, and indicate enthusiastic work on the part of this *newly created school*, which is mainly due to the example and work of Prof. Rây himself. (The italics are mine). Prof. Rây's first published work was the "History of Hindu Chemistry", written about thirteen years ago, in which he showed there was considerable scientific spirit and also more or less empirical work amongst the ancient Hindus, as indicated in their religious writings, "Tantras", etc., written in ancient Sanskrit. It is, of course, only a man like Prof. Rây, well acquainted with Sanskrit and with a thorough knowledge of modern Chemistry, who could have written such a work. In this book Prof. Rây deplored the decline of scientific spirit in India, and "lamented that the spirit of inquiry had died out amongst a nation naturally prone to speculation and metaphysical studies". He now writes:—"Little did I dream that in the course of a decade or so I should have to revise the estimate I then formed of the capacities of my own countrymen and chronicle that a bright chapter is about to dawn in our life-history". It certainly appears from the present activity of original chemical research in Bengal that a new spirit is abroad, and it is to be hoped that this will quickly spread over the remainder of India, and that the same spirit of research will embrace all the other sciences".

Prof. S. S. Bhatnagar, who now so worthily fills the chair of Physical Chemistry in the University of the Punjab in a quaint style which is his own thus sums up the work of the pioneers in the field of Physical Chemistry in India :

"Amongst the pupils whom Sir P. C. Rây was able to attract was Dr. N. R. Dhar. He was evidently one of those chosen by him for accumulating physical evidence on the structure of mercury nitrite. Dr. N. R. Dhar's name first appeared in chemical literature in 1912 along with that of Sir P. C. Rây; and although in 1910, two years previous to Dr. Dhar's paper we find the record of a contribution by Mr. S. C. Mukerjee on the ionisation of mercury nitrite solution as examined by the cryoscopic method, the credit for starting for the first time systematic research-work in Physical Chemistry by an Indian must go to Dr. N. R. Dhar. Since the year 1912 a steady stream of papers on a variety of subjects has flowed from his laboratory. Out of a total of over 150 papers published by Dr. Dhar, it is not possible to determine exactly which constitute his best work. The versatility of his mind has made him travel swiftly and with ionic agility in the field of Electro-

chemistry. . . . Dr. Dhar's initiation in Physical Chemistry was infectious and following his example J. C. Ghosh and J. N. Mukherjee enrolled themselves in the service of Chemistry as early as 1914-15. . . . Ghosh's Theory (1918) on the abnormality of strong electrolytes created a stir in the scientific world when it first made its appearance. The hypothesis of complete dissociation of strong electrolytes postulated by Sutherland, Bjerrum and Milner had prepared the field for a warm reception of a theory of complete dissociation. Milner's treatment of his theory was extremely logical but he failed to demonstrate its advantages and the advanced mathematics involved deterred many chemists from attacking the subject. The clarity with which Ghosh demonstrated the superiority of his hypothesis over the ideas current at the time received for it a ready acceptance from such distinguished scientists as Planck, Nernst, Sir James Walker and G. N. Lewis. The theory has been subjected to very adverse criticism by Kendall and Partington on account of certain apparent defects in the mathematical presentation, Theories come and go but good ones always open up new fields of research and lead to the consolidation of the ground already covered. From that standpoint Ghosh's theory will always live as it has undoubtedly introduced a change in scientific thought and established the hypothesis of complete dissociation as far as strong electrolytes are concerned. Debye gave a better mathematical treatment of the theory of complete dissociation in 1923.

As a result of the investigations of Bronsted, Noyes and G. N. Lewis, it is now more or less generally accepted that the Milner-Ghosh-Debye theory of complete dissociation gives a satisfactory representation of facts at high dilutions. Nernst has recently drawn attention to the fact that the Debye theory fails entirely to account for the heat of dilution even in simple cases. In fact Nernst has reiterated in the latest German edition of his work his faith in Ghosh's treatment and considers that it contains the kernel of truth, though he argues that a modification of the theory is necessary. . . . During recent years the laboratory of Dr. J. C. Ghosh at Dacca has contributed considerably towards an interchange of thought between the older and newer Universities of India, and a steady stream of papers mostly on the subject of photochemistry has been forthcoming from his laboratories. He has worked on some of the most important aspects of photochemistry. His recent contributions on the Relative Mass of a Proton and an Electron (1927) are of an interesting character as the experimental value of the ratio $\frac{M+m}{m}$ (where M is the mass of the proton and m that of the electron) is in agreement with the value obtained on Ghosh's equation. The wealth of imagination displayed by Ghosh and

his school coupled with their strong mathematical inclination leaves no room for doubt that work of lasting importance is bound to be produced from Dacca. . . . The credit of initiating research-work in Colloidal Chemistry in India goes to my friend Professor J. N. Mukherjee of Calcutta. . . . I crave your indulgence for a few minutes to disclose the account of a private conference which Dr. Ghosh, Dr. Mukherjee and I had in the year 1919 in the University College Chemical Laboratories in London. The subject-matter of our conference was the starting of an All India Chemical Society, with Sir P. C. Rây as its first President. We had a long discussion on the subject and afterwards we took Professor Donnan into our confidence and he fully approved of the plan. On our return to India out of the many plans which we made together and of all of which Dr. J. N. Mukherjee was to be the custodian, the one which he did not forget to carry out was the founding of the Indian Chemical Society. The President and the Secretary constitute the life and soul of a learned Society, and if one of them happens to be a colloidal chemist, the success of the society is by tradition ensured. Take for example the case of the Chemical Society, London, which we all recognise as the parent of our Indian Chemical Society. The first President of that Society was Thomas Graham, the father of Colloidal Chemistry. By a curious chance Dr. Mukherjee, who is the first Secretary of the Indian Chemical Society happens to be the father of Colloidal Chemistry in our country, and may we from this infer that our Society will have as glorious and as distinguished a record as the parent Society in London, early discussions for whose establishment were also held in the University College Chemical Laboratories in London?"—*Presidential Address* (Chemical Section). Fifteenth Indian Science Congress, January, 1928.

The time had now come as stated just before when I was to retire from the Presidency College and join the newly-founded University College of Science. Under ordinary conditions I might have stayed on another year more as under the "55 years' rule" I would be due to retire from Government Service after completing that age.

The address which the students presented to me on the occasion of my retirement and the reply I gave will speak for themselves :

Sir,

On the eve of your retirement from the field of your labours in the Presidency College, permit us, your students of the college, to offer you this humble token of our united love and regard.

Your place in the college, Sir, we are afraid, can never be filled. Men will come and men will go but where else can we possibly expect to find again that sweetness of disposition, that vigour of simplicity, that unwearied spirit of service, that broadbased culture, that wisdom in deliberation and debate which for the space of thirty years or more endeared you so much to your pupils?

Yours was, Sir, indeed no small achievement. Your way of life, with its distinct Indian traits, recalled us to the sweet and simple and manly days of Indian attainment. You have been to us all through a guide, philosopher and friend. Easy of access, ever-pleasant, ever-willing to help the poor and needy student with your counsel and your purse, living a life of sturdy, celibate simplicity, with genuine patriotism, not loud but deep, you have been to us an ancient Guru reborn, a light and an inspiration from the treasure-house of old Indian spirituality.

When the history of India's intellectual attainment in the modern era comes to be written, your name will be mentioned in the very vanguard of progress as the maker of modern chemistry in India. The credit and the glory of being the pioneer in the field of chemical research and of giving the impetus to scientific curiosity in this country is yours. Your "History of Hindu Chemistry" has opened a new chapter of Indian attainment and built a bridge over the abyss of the past whereon our young researchers may shake hands with the spirits of a Nagarjuna and a Charaka.

And you have effected more. The theoretical study of chemistry has impelled you to its application to the natural resources of the country and the Bengal Chemical and Pharmaceutical Works is a living testimony to what un-aided Indian Science and business organisation can accomplish.

In the evening of your life, Sir, when men seek for rest and repose, you have preferred to remain in harness, to make the torch of Science you lighted a generation ago, burn steady and clear! May the College of Science and the cause of chemical research profit long by your untiring zeal! May many more and yet many more groups of eager investigators be sped on this path with your blessing! And may we, Sir, the present students of the Presidency College and our successors, occupy a warm corner in your loving and capacious heart!"

It was really a wrench. Oh! how such a parting reminds one of the final parting from this world amidst the tears and sobs of relations and friends. In a voice tremulous with emotion and almost faltering I replied as best I could.

Mr. President, my esteemed colleagues and young friends :

I hope I shall be pardoned if I fail adequately to give expression to my pent-up feelings—so much I feel embarrassed and overpowered at the kind words, nay, eulogistic terms in which you have been pleased to refer to me. I know I should make due allowance for them, for on an occasion like this you are apt to be overindulgent and forgiving to my many failings and shortcomings and equally prone to lay undue stress upon my good points, if you have been able to discover any. However, let that pass. Gentlemen, I have often regarded it as a divine dispensation that my dear friend and distinguished colleague (pointing to Sir J. C. Bose) and my humble self should have been working side by side for close upon thirty years, each in his own department, cheering each other up, through evil report and good, and I trust that the fire which it has been our lot dimly to kindle will be kept burning on from generation to generation of our students, gaining in brilliance and volume and intensity till it will have illumined the whole of our beloved motherland. Perhaps some of you may be aware that I have never cared to set much store by what are ordinarily called worldly effects or possessions. If, however, any one were to ask me what treasures I have piled up at the end of my career at the Presidency College, I would answer him in the words of Cornelia of old. You have all heard of the story of the Roman matron, how on one occasion a patrician lady had called on her and was displaying with vanity her ornaments and jewels, and how when she asked Cornelia in turn to bring forth her own jewellery, she (Cornelia) begged to be allowed to postpone her exhibits for a time, and patiently waited till the return of her two sons from school. Then pointing to her boys (famous afterwards as the Gracchi), with conscious pride she exclaimed, "These are my jewels." I should also Cornelia-like point to a Rasik Lal Datta, a Nilratan Dhar, a Jnanendra Chandra Ghose, a Jnanendra Nath Mukherjee, to mention the names of only a few representatives of the devoted band of workers who have gathered round me from time to time. Gentlemen, in my article on the "Reflections on the Centenary of the Presidency College", in the current issue of your *College Magazine*, I have tried to bring home to you the noble part which our great institution has played in the making of new India. I hope it will be yours to keep up its glorious traditions.

Gentlemen, it is impossible for me to think that I am severing my connection with the Presidency College; all my cherished associations are entwined round it—every nook and corner of the Chemical Laboratory, even the very brick and mortar, is redolent of fragrant memory. When I further recollect that as a boy I was for four years

a student of the Hare School, which is only an affiliated feeder of the parent institution and that I was a student of the science department of the College for another four years, it will readily be seen that my connection with your College extends to a period of thirty-five years, and it will be my dying wish that a handful of my ashes should be preserved somewhere within the hallowed precincts of your academy. Gentlemen, I am afraid I have gone beyond the limit within which I intended to confine myself. I thank you once more from the bottom of my heart for your fine address, and I assure you that the memory of to-day's function I shall cherish to the last day of my life.¹

I should not fail here to pay my tribute to the memory and work of the late Dr. E. R. Watson. As Professor of Chemistry at Dacca he inspired a band of young chemists who gathered round him and emulated his example.

"In December 1908 the first batch of students passed the M.A. Examination in Chemistry from the Dacca College. Dr. Watson selected A. C. Sircar, one of the successful candidates, and jointly began doing research work. Two others joined afterwards. This was the beginning of research in Chemistry at Dacca College. Since then up to the time of his leaving Dacca for Cawnpore, three or four research students all along worked jointly with, and under the direction of, Dr. Watson. Many of the pupils of Dr. Watson earned for themselves, by continuing research work afterwards, reputation and fame as Chemical investigators and have made material contributions to the advancement of knowledge. The names of Dr. Anukul Chandra Sircar, Dr. Prafulla Chandra Ghosh, Dr. Brojendra Nath Ghosh, Dr. Sudhamay Ghosh and Dr. Sikhi Bhushan Datta may be specially mentioned here. . . . Dr. Watson was an indefatigable worker. He was never seen exhausted or tired of work. With a smiling face he would continue working either alone or with the students, from morning till night. His time was generally engaged as below :—7 to 9-30 A.M.—own research work in the laboratory; 10-30 to 12-30—class lectures and official work; 1-30 to 5—supervision of the practical work of the I.Sc., B.Sc., and M.Sc. students; 5-30 to 7 P.M.—supervision and guidance of the work of research students. After that he would very often continue his own research work in the laboratory and make research notes up to 9 or 10 P.M. During the holidays and vacation Dr. Watson's whole time was occupied in his own research work and guiding the research work of the pupils".—*Vide* obituary notes, *The Dacca Univ. Journ.*, March 1927, pp. 138-40.

¹ *Presidency College Magazine*, vol. iii, September, 1916, p. 334.

Professor B. K. Singh also began his important studies in substituted quaternary Azonium compounds at Dacca College, which he has since then continued at Lahore and Cúttack with remarkable success.

Fresh recruits to the Indian School of Chemistry were enrolled at the College of Science (*vide* next chapter) which I soon joined on my retirement from the Presidency College. Amongst these, the names of Priyadarajan Rây, Pulin Behari Sarkar, Jnanendra Nath Rây, Jogendra Chandra Bardhan, Prafulla Kumar Bose, Gopal Chandra Chakravarti and Mono Mohon Sen deserve prominent mention.

In this connection the case of Prof. Priyadarajan Rây should have special mention. He is regarded as an acknowledged authority on "complexes and valency" as also on Micro-Chemistry, and it is my practice to submit my own papers to his criticism and judgment before they are contributed to the Chemical Societies. My presidential addresses at the annual meetings of the Indian Chemical Society of 1926 and 1929 are based mainly upon his ideas and suggestions. A more silent and unobtrusive worker is seldom to be met with. It was with some difficulty and under pressure that he could be persuaded to go to Europe and give a finishing touch to his attainments. *He* at any rate, does not seem to suffer from the distemper known as "inferiority complex". A Rash Behari Ghosh Travelling Fellowship was literally forced on him. He worked for four months in the laboratory of Professor Ephraim at Berne where he was received and welcomed as a valued colleague whose name and fame had already preceded him. He has already published at least a score of papers, any one of which if submitted to any university would win for him a doctorate. He has not, however, as yet been able to make up his mind to do this.

Events are of two kinds—the silent and the noisy. Priyadarajan's work comes under the former category. Apart from his other contributions, his recent isolation of an isomer of

thiosulphuric acid is a singular achievement and marks him out as an original investigator of a very high order.

J. N. Rây, after having completed his career at Calcutta, worked for some three years in Professor Robinson's laboratory at Manchester. His joint and independent contributions prove that he has got a thorough grasp of the Chemistry of alkaloids.

Pulin Behari Sarkar, another fellow-student of Ghose, Mukherjee and Saha, after completing his education here, went to Paris and worked for 3 years at the laboratory of Professor Urbain at the Sorbonne on the rare earths. His latest contribution on *chemical homology* stands to his credit as a researcher of promise.

Rajendra Lal De was a research scholar under me at the Presidency College from 1913-16. He is joint author with me of some papers on nitrites and hyponitrites. He has also published in independent capacity some interesting papers on valency. He is now a lecturer in the Dacca University.

Prafulla Kumar Bose is another brilliant worker. His papers on "Benzidine Rearrangement in Heterocyclic series" show remarkable originality and have been referred to at length in the current number of the *Annual Report of the Progress of Chemistry*.

Gopal Chandra Chakravarti was a research student under me from 1922-24 and has published a series of investigations on sulphur compounds in general and synthetic dyes. He was admitted to the degree of Doctor of Science in 1928, and is now a Lecturer in the Indian Institute of Science, Bangalore.

Jogendra Chandra Bardhan, who has been a devoted and indefatigable worker in Organic Chemistry under Professor P. C. Mitter, after taking his Doctorate of the Calcutta University, was awarded a Palit Foreign Scholarship. He studied for three years under Professor Thorpe in the Imperial College of Science and took his doctorate of the London University and later on proceeded to Utrecht where he worked for a short period under Professor Ruzicka. His synthesis of Balbiano's acid is a contribution of unusual excellence.

Mono Mohon Sen, also working under Prof. P. C. Mitter has got his Doctorate on the strength of an important communication on the chemistry of heterocycline compounds.²

Bires Chandra Guha, who was a brilliant student at the College of Science and who worked in my laboratory as a research student, proceeded to Europe as a Tata Scholar. He made a special study of Biochemistry under Professor Drummond at the University College, London, and later at the laboratory of Professor Hopkins at Cambridge. Having got the degrees of Ph. D., and D. Sc., (London) he proceeded to Berlin and Vienna to come in touch with some of the masters of Biochemistry. He has lately returned after a very successful career as an investigator. He has published several original papers on his special subject.

Sushil Kumar Mitra, a research scholar working in my laboratory, has given proof of singular originality. His synthesis of ethyl thioaceto-acetate is a remarkable achievement.³

In the laboratories of my colleagues Professors J. N. Mukherjee and H. K. Sen, some brilliant researches have been carried on by their pupils.

It was hitherto the custom to contribute papers by Indian Chemists to the journals in England, Germany and America. It was, however, thought highly desirable to start a Chemical Society of our own with a Journal as its organ. Its genesis has been given in the address of Prof. Bhatnagar which has been quoted already.

The correspondence published below will further supplement the above account.

"The President and Council of the Chemical Society send hearty congratulations and warm wishes to the newly formed Indian Chemical Society". (Telegram).

² Professor P. C. Mitter's laboratory has been very active and fruitful of late years. The synthesis of *rubriadin*, *manjisthin* and also *aleo-emodin* deserves special mention.

³ *Nature* : Aug. 1, 1931, p. 189, also *Journl. Indian Chem. Soc.*, 1932.

"The following letter has been sent by the President of the Indian Chemical Society, Sir Profullachandra Ray, in reply to the above.

92, Upper Circular Road,
Calcutta (India).

October 23, 1924.

"Dear Prof. Wynne,

I thank you very much for your telegram dated the 17th October, 1924. I need scarcely assure you how highly we value the congratulations and warm wishes of yourself and the Council of the Chemical Society, which we shall always look upon as the parent Society. The J.C.S. has hitherto been the only organ of chemists throughout the British Empire, and the Publication Committee have been hard put to it to find space for the ever-increasing number of communications and have often been under the necessity of appealing to authors of papers to abridge them as far as possible. This will explain the necessity of founding the Indian Chemical Society, with an organ of its own.

More than 40 years ago, while a student at Edinburgh, I almost dreamt a dream that, God willing, a time would come when modern India would also be in a position to contribute her quota to the world's stock of scientific knowledge, and it has been my good fortune to see my dream materialise. I have shown in my *History of Hindu Chemistry* that this branch of science was zealously pursued in ancient India and I have now the satisfaction of finding chairs of Chemistry in most of the Universities of India filled by my own pupils, who have also been regular contributors to the J.C.S.

It will always be our endeavour to maintain cordial, nay filial, relationship with the parent society, whose inspiration we shall always highly prize. I can scarcely suppress the feelings which arise in me as I am penning these lines. My mind naturally travels back to the memorable February 23, 1841, when the original members met for the purpose of taking into consideration the formation of the London Chemical Society. I have, further, the gratification to remember that of the original members of the London Chemical Society, I had the good fortune of knowing Lord Playfair (who represented Edinburgh University for some time) to whom I was introduced by my revered teacher, Crum Brown.

Thanking you once more for your good wishes,

Yours etc.,

(Sd.). P. C. Rây."

Vide Proceedings of the Chemical Society (London), dated November 20, 1924.

CHAPTER XV.

UNIVERSITY COLLEGE OF SCIENCE.

I joined the College of Science in 1916 after the October (Puja) holidays. The discriminating eye of Asutosh Mukherjee, was not slow to recognise that J. C. Ghosh, J. N. Mukherjee, M. N. Saha and S. N. Bose would each and all make a name for himself, if suitable opportunities were afforded them. They were therefore invited to join the new Institution as Lecturers. But a serious difficulty arose at the very beginning.

Under the terms of the Palit and Ghosh deeds of gift the corpus of the endowments could not be touched neither the income accruing from it except to a very restricted extent, and it was expressly laid down that the buildings, appliances, apparatus etc., of the laboratories as also the expenses of their up-keep should be provided by the University. The latter was unfortunately short of funds. In the chemistry department I took inorganic chemistry and my colleague Professor P. C. Mitter, the organic branch and we made the best of the materials available. But the departments of physical chemistry and of physics were practically without any apparatus. Besides, the continuance of the War made it almost impossible to procure any apparatus from Europe.

Asutosh Mukherjee was at his wits' end. There was a surplus fund from the accumulation of leavings from the fees levied from the examinees for the last quarter of a century or so but it was spent in providing the Science College with a local habitation as required under the Palit Trust Deed. He was thus called upon to make bricks without straw. The resourceful Asutosh came to know that the Maharaja of Cossimbazar (Sir Manindra Chandra Nandy) had purchased some costly physical apparatus with a view to opening the Honours Course in physics at his own college at Berhampur.

But the scheme had been abandoned. The Maharaja on being approached, with his characteristic generosity, made over the whole to the Science College. Prof. Brühl of the Engineering College at Sibpur also lent some apparatus and I myself obtained the loan of a "conductivity" apparatus which I badly needed, from the St. Xavier's College.

In this manner, poorly equipped, the two departments of physics and physical chemistry were started. But the professors and lecturers felt handicapped at every stage, nor could they carry on any original investigations of their own. In the history of science as also of literature it has often been found that a man rich in original ideas when made to retire unto himself and thrown upon his own resources develops something remarkably original. John Bunyan, the tinker, devoid of literary culture though he was, occupied his idle years in Bedford jail in writing his immortal work, *The Pilgrim's Progress*; Newton in the year of the great plague when only 23 years of age, was compelled to leave his haunt at the Trinity College and retire to his native place at Woolsthorpe near Grantham and there without the use of his instruments elaborated his theory of Gravitation.

If I may compare great things with small, the formulation of "Ghosh's Law" has a similar history behind it. Deprived of the use of apparatus he shut himself up in his room in the College of Science with volumes of *Zeitschrift für Physikalische Chemie* and other Journals of Physical Chemistry scattered about him, he tabulated the enormous data on "conductivity" accumulated in their pages and by a sort of happy sagacious intuition as it were arrived at the equations which at once excited the attention and admiration of the scientific world. Megh Nad Saha who had developed talents of a high order in the domain of mathematics and astro-physics found himself under a similar sad plight. He too at first writhed in agony, as it were, as he could not for want of suitable instruments do research work in experimental physics. All the same he began contributing a

series of memorable papers to the *Philosophical Magazine*, *Journal of Physics* (America), *Proceedings of the Royal Society*, etc., culminating in the elaboration of what is known as "Saha's Equation". Meanwhile Asutosh was making desperate efforts to secure an adequate grant from the State. But the fates were not at all propitious. It has been the custom in British India—a custom which has almost the sanction and validity of an unwritten law—that whenever a public-spirited citizen comes forward with a rich endowment to found an educational Institution, the State supplements it with an equal or substantial amount in the shape of a grant-in-aid. It is only necessary to cite two particular instances as apposite to illustrate my case. The Institute of Science at Bangalore which owes its existence to the munificent benefaction of the late J. N. Tata, has a yearly grant of Rs. 150,000 from the Government of India. But political considerations swayed those among the powers that be, who were responsible for the educational policy of the Government of India. Mr. (now Sir Henry) Sharp was the Educational Secretary. He was Director of Public Instruction under the regime of Sir Bamfylde Fuller after the partition of Bengal and was the right-hand man of that reactionary ruler. The boys of the Serajganj High School had incurred his wrath by crying "Bande Mataram" (Hail Motherland!) and giving vent to other patriotic outbursts. Mr. Sharp and his Chief were determined to punish the obstreperous lads by disaffiliating the school, which according to their point of view was a hot-bed of sedition. But the Syndicate of the Calcutta University refused to be a pliant tool of their policy. Sir B. Fuller got furious at the impertinence of the 'varsity dons. He wrote to the Viceroy, Lord Minto, threatening resignation unless the recalcitrant body was compelled to eat the humble pie. Lord Minto who had often been compelled to give a *carte blanche* to the "sun-dried bureaucrats" though much against his will, had yet the traditional instincts of an English nobleman. He

not only refused to interfere but took Fuller at his word and accepted his resignation.¹

Mr. (now Sir Henry) Sharp evidently had not forgotten the sunb which he and his Chief had received. During the vice-royalty of Lord Hardinge he was translated to the India Government and was made Education Secretary. Now was his opportunity to settle old scores. He knew well that the one man who had guided the policy of the senate and the syndicate during the stormy days following in the wake of the partition was Asutosh Mukherjee. Sir Henry Sharp therefore stood against Asutosh and his favourite College of Science. It is noteworthy that at first Lord Hardinge was favourably inclined towards the latter ; in fact, in recognition of the princely benefaction of Taraknath Palit, a Knighthood had been conferred on him but somehow or other Sir Henry gained his ear and his mind was changed. It was also rumoured at the time that Lord Hardinge had knit his brow over the clause in the deed of gift that *none but Indians should be eligible for the*

¹ Cf. "The Fuller difficulty came to a head and into full public view in July (1906). The boys of certain schools at Serajanj had been guilty of violently unruly conduct in the town, and the Lieutenant-Governor had officially applied to the Syndicate of Calcutta University to withdraw recognition from the schools. The Government of India pointed out to him that if he insisted on University taking action, result would be acrimonious public discussion in which partition and administration of new province would be bitterly attacked, and they thought it most desirable to avoid such contingency, and would prefer to rely upon New University regulations to deal with political movement in schools. For these reasons they suggested withdrawal of his request to University. The Lieutenant-Governor asked that either these orders should be re-considered, or else that his resignation should be accepted. Lord Minto was quite alive to the objection against changing a Lieutenant-Governor in face of agitation, but it became every day more evident that the administration of the new province was unreliable and might lead to further difficulties. If we persuaded him to remain we should run the risk of having to support him against all criticism. So the resignation was accepted. I telegraphed concurrence without delay."—Lord Morley : *Recollections*, vol. ii, p. 184.

professorships.² When he came down to Calcutta in March, 1915, his presence was taken advantage of and the Convocation for the conferring of degrees was held at the Town Hall. In the speech which he delivered on the occasion he pretended to be practically ignorant of the magnificent buildings which had almost been completed and in which was located the College of Science.³ The attitude of the Imperial Government somehow or other underwent a change and it became abundantly clear that no help could be expected from that quarter.

It is again a strange commentary on the "benevolent" intentions of our rulers that when Gokhale brought his compulsory Primary Education bill before the very Assembly over which Lord Hardinge presided, Sir Harcourt Butler, the Education Minister, gave it short shrift on the score of want of funds. Poor Gokhale died almost broken-hearted at the treatment accorded to the one object to which he had dedicated the latter days of his life.

That the Government of India has been actuated by political bias in withholding financial aid from the Science College is proved by its generous attitude towards two other sister institutions in the southern and western Presidencies respectively. The explanation is not far to seek. Both these institutes were staffed, managed and controlled entirely by the British element. The Indian was there but more or less in a subordinate capacity and drawing poor pay. The Bangalore Institute on which a capital expenditure of about a crore of rupees has been incurred and which boasts of an annual income of 6½ lakhs of which 1½ lakh is the contribution of the India Government is not regarded as much of a success,

² It is scarcely necessary to remind the reader that the reason for this clause is to be found in the virtual exclusion of Indians from the higher branch of Educational Service as has been stated before.

³ I am not fully aware of the dispositions you propose for the utilisation of these donations or of the Rs. 12,000 a year of Imperial grant which is to be expended on the upkeep of your University Laboratories.
—Lord Hardinge : *Convoc. Add.*

and public opinion throughout India has been roused against the methods under which it is conducted. It affords on the other hand a strong proof—if proof at all were needed—that merely filling the top appointments with princely-paid Europeans does not necessarily conduce to the success of an educational institution.

Professor Megh Nad Saha, who, as a member of the Quinquennial Review Committee of the Bangalore Institute of Science, had a unique opportunity of arriving at a correct estimate of its working has recently observed :

“It has not served the purpose for which it was called into existence by the late Mr. Tata and Dewan Sir Seshadri. There are many contributory causes but one main reason seems to be its location and its isolation. An Institute of the kind that exists in Bangalore should have been near a great industrial city. For then alone would there have been opportunities for its members and workers to put their theoretical knowledge to practice. As it is, I am certainly aware of the fact that most youngmen who undergo training there rush up either to Calcutta or to Bombay in search of jobs.

The second reason is that inspite of the fabulous salaries paid to the past and present Directors and heads of departments the Institute has not been able, except probably in a few solitary instances to attract or retain in its service men who can inspire confidence or put life into the work of the Institute. There is no justification for giving a fabulous salary to a Director for purely administrative work.

The third reason for the Bangalore Institute being a failure is the method of recruitment to its services. It is very faulty and the salaries paid to the junior staff are very inadequate.

* * * I will cite to you a parallel case and quote to you some facts and figures. Take the case of the National Physical Laboratory at Teddington near London, one of the biggest and most famous Science Institutes in Great Britain. Its Director gets £1,200 a year and the most junior scientific workers, mostly new recruits, in most cases £240 a year. The ratio thus obtained between the emolument of the Director and his lowest paid assistants thus comes to about 1 : 5 But here at Bangalore the Director gets a salary of Rs. 3,500 per month which corresponds to about as much as £4,000 per year,⁴ whilst his assistants or the research

⁴ Professor Saha evidently forgot to add that the present Director was drawing all along an extra Rs. 2,000 a month *i.e.*, altogether

workers get about Rs. 150 per month or £120 a year. The ratio in this case works out to 1 : 30. You will thus see that out of the income of the Institute a considerable sum is all spent away on its Director and the professors and there is no money left for the younger and really promising workers. I feel so far as this Institute is concerned, there ought to be more research assistants, and every one of them ought to be paid much more handsomely so that they can really devote their lives to the problems they set out before themselves to solve. The pay of the higher posts ought to be cut down to the same level as those of the professors in Indian Universities."

Sir C. V. Raman who was a member of the Pope Committee and who is also a member of Council of the Institute has expressed his views in still more condemnatory terms.

"The failure of the Indian Institute of Science at Bangalore and of the Forest Research Institute at Dehra Dun to produce scientific results proportionate to the colossal sums of money expended upon them should be a warning to our legislators in this respect."

The Royal Institute of Science at Bombay which also owes its existence to the munificent benefactions of the citizens of that city enjoys a most liberal grant from the Government. The total contribution from the Public benefactions amounts to Rs. 24.75 lakhs and that by Government to rupees 5 lakhs. The capital expenditure incurred was rupees 22 lakhs and one lakh was set apart for scholarships. This would leave a balance of Rs. 6.75 lakhs with the Government, the interest of which at $3\frac{1}{2}$ p.c. would come up to Rs. 25,000/-. The annual expenditure being rupees 1.5 lakhs, it is evident that the annual contribution from Provincial funds amounts to Rs. 1.25 lakhs on an average. Thus, besides having contributed substantially to the capital expenditure (Rs. 5 lakhs) the Government of Bombay makes a liberal annual contribution to the Institute. This is in marked contrast to the niggardliness shown towards the University College of Science, Calcutta. Enlightened public opinion, however, condemns it as a failure as the recent discussion in the Senate of Bombay University goes to prove :

Rs. 5,000. On the expiry of the five years' contract he has been serving on the statutory pay of Rs. 3,000 a month plus Rs. 500.

"There were points in the discussion that ensued on the proposals of Dr. Viegas and the amendment of Mr. Gokhale which should not escape public attention." * * * *

* * * "So very ill-defined and inadequate is the control of the University authorities over the Royal Institute of Science that those who direct its affairs are a law unto themselves and Government are notoriously indifferent to the public disappointment with the achievements of the Institute. It was never meant by those public benefactors who helped to call it into being that it should degenerate into doing the work of second-grade colleges."—*Bombay Chronicle*, Aug. 25/30.

It is not quite correct to say that only "the work of second-grade colleges" is done in the Institute. As a matter of fact post-graduate teaching to a certain extent is imparted. But the bitter and loud complaints seem to be justified.

It is never for a moment suggested that the Indian is superior to the European in intellectual powers. The explanation of the signal failures is to be sought for in another direction. As the late Mr. G. K. Gokhale often used to say: "the competition lies between third rate Europeans and first rate Indians."

Another reason why the Science College is looked upon with no friendly eye, nay with positive displeasure by the Government, is that the Institution owes its origin to Indian initiative, a circumstance that does not fit in with its policy. Everything calculated for the good of the country must emanate from the fountain head of beneficence—the paternal bureaucracy.

Asutosh was thus called upon to shift for himself as best he could and what little could be spared from the surplus of fee-funds was regularly earmarked for the equipment and upkeep of the laboratory. A portion out of the savings of the Palit and Ghosh endowments has also been utilised for the same purpose. Altogether more than 24 lakhs of rupees have been thus spent from these sources.

In order, however, to meet the requirements of an up-to-date Science College new departments had to be added and thanks to the second Ghosh Endowment and the Khaira Endow-

ment of about Rs. 6 lakhs (1921) four more chairs of Applied Physics, Applied Chemistry, Physical Chemistry and Wireless Telegraphy respectively have been recently founded. When the original building was planned there was no provision made for these additions and already we are pinched for space ; there is over-congestion and no adequate accommodation can be found for the workshops in connection with them. Moreover, for want of funds these departments are ill-equipped and to a certain extent starved and paralysed in activity.

At the recent (1926) Congress of the Universities of the Empire to which I was deputed as a delegate, and which was held at Cambridge under the presidency of the late Lord Balfour, when the first day's proceedings opened, the subject of the discussion being "The State and the University" I felt called upon to give expression to my feelings in these words :

"I did not come prepared to speak on this subject but as I find our High Commissioner (in whom I recognise one of my former pupils) is absent on account of illness and some other members, too, I venture to appear on this platform, where I consider it a privilege to say a few words.

In 1912 at the first Congress of the Universities of the Empire, I was called upon to address the Congress ; so I am not in a strange position and I believe our present Chairman himself presided on one of those occasions.

My principal object in speaking to you today is to present to you our unfortunate position in Bengal. I hope the weighty words of wisdom fallen from the lips of your honoured President who is also Chancellor of the Universities of Oxford and Edinburgh, will receive due and careful attention at the hands of the Government of India as well as of Bengal.⁵ You know how the political reform of 1919, the Montagu-

⁵ Lord Balfour in the course of his inaugural address observed :—

"Modern education was very expensive compared with the education even of 100 years ago or less. The scientific side alone was enormously costly in these modern days. We could develop what our forefathers had done only by the very expensive methods which modern apparatus inevitably threw upon every institution which carried out its work properly. If the State were asked to subscribe large funds there would always be a natural and pardonable instinct on the part of the State to control and supervise the working of the Institution which

Chelmsford Scheme has affected the universities of India, specially that of Bengal. The Universities have been provincialised by that Scheme. When we of the Calcutta University ask the Government of India to help us they refer us to the Government of Bengal; while the latter in its turn takes shelter behind the Meston Award—we are thus placed on the horns of a dilemma. As for private munificence for research work we have a splendid example in the Bangalore Institute of Science, which owes its existence mainly to the generosity of the late Mr. J. N. Tata of Bombay. Bombay is the land of millionaires and multi-millionaires. Though Bengal is not fortunate to claim many millionaires as her sons, we have not been entirely barren; our College of Science owes its existence to the large-heartedness of two of Bengal's great sons, the first being Sir T. N. Palit, who gave away fifteen lakhs of rupees shortly before his death, which would represent £100,000 sterling. He was only a lawyer and had to deprive his children of their dues to do it, for he practically gave away everything he owned for the foundation of the College of Science.

He was followed by another distinguished citizen, also a lawyer, the late Sir Rash Behari Ghosh, one of the foremost and most talented men in the forensic line. He gave away some £150,000 practically also everything he owned, for the benefit of higher education in science. We have had every help from the Indian quarter and the College of Science represents altogether rupees sixty lakhs.

But here comes the tragedy of the whole thing. Whenever we approach the Government of India or that of Bengal, as I have already said, we are told that there are no funds to spare though when grandiose Imperial Schemes arise money flows like water. I have had occasions to criticise the niggardly parsimony of our Government. We are treated as so many *Oliver Twists*. I can only hope that the weighty words we have just heard will be broadcasted and even sent by Reuter—at any rate a summary of it—and by the next mail the whole of the speech will be sent to the papers and will be read and digested in every part of India, because it is the most important part of the British Empire

they were doing so much to support. It was natural but it was extremely dangerous. He did not think that in the older Universities in England there was any probability of that danger becoming menacing to any serious extent. They had received assistance from the State in this country but their traditions were deeply rooted, and he did not think there was any serious symptom of any Government attempting to interfere with University autonomy which whether well or ill exercised was at the worst far better than State control."

and there is no reason why unification of the higher branches of science should not be pursued there as anywhere else.

I would specially draw attention to one fact. The great Indian nation which I represent was pre-eminent in the glorious days of the past. Max Müller somewhere says that if the Hindus had done nothing else but presented the European world with the symbolic notation and the Arabic numerals—they are not Arabic except that the Arabs acted as intermediaries—the debt of Europe would have been unrequitable. The Hindu has great potential abilities and this great university hallowed with the traditions and prescriptions of ages does not need to be told of it. It has ample proof of the Hindu intellect and what it is capable of, if properly encouraged and nourished. I have only to cite the instances of a Paranjpye, a Ramanujam, a Jagadis Chunder Bose—all of whom were in the seminaries on the banks of the Cam.

I consider I have a double right to speak. First, not only because I had already once before spoken under the auspices of our eminent Chairman but because nearly half a century ago I was for six years a student of one of the great universities of the North of which your distinguished President also happens to be the Chancellor. To use the language of a chemist, I would say, I am linked to him by double chemical affinity.

I hope that the Government of India, or that of Bengal whichever it may be, will now come forward and give us substantial help for the University College of Science. I have calculated that we have only received two per cent. help from the Government, whereas 98 per cent. has been contributed by our own people."

* * * * *

I should be doing less than justice to myself if I rested here by throwing all the blame simply upon the shoulders of the Government of India ; a considerable part of it must be shared by my own countrymen to whom urgent appeals have been made for help. The noble example set by Palit and Ghosh, who gave away the major portion of their life's earnings for the cause of science has not been emulated by others. I have dwelt elsewhere upon this aspect of the misfortune of Bengal in failing to enlist the sympathy of the trades-people, businessmen and commercial magnates in general for public good. But the educated community as a class has hitherto turned a deaf ear to our cry for succour and has been noto-

riously parsimonious. The "Lions of the bar," judges of the High Court and district courts ; other judicial and executive officials ; high functionaries such as Accountant Generals and *Secretariat* officials not to speak of the Ministers and members of the Executive Council of the province, who unblushingly draw Rs. 64,000/- a year—who at any rate owe a debt of endless gratitude to their own *alma mater*, have hitherto only been conspicuous in their selfish pursuit of gains and making their pile. In England it is a regular feature for the old alumni of the universities, who have been successful in life to shower donations and gifts upon their *alma mater*.

I need not pursue further my account of our infant Institution which has passed its stage of apron strings and has just stepped into its teens. My young colleague Prof. Raman (of *Raman Effect*) is a host in himself.⁶ Suffice it to say that if this temple of science had produced only a Raman and nothing else it will have amply justified the high expectation formed by its Founder who, alas, is no longer in the land of the living. His colleagues D. M. Bose, P. N. Ghosh, S. K. Mitra, B. B. Rây and others have made notable contributions in their respective branches. In Applied Mathematics again Dr. Ganesh Prosad and his successors S. K. Banerjee, N. R. Sen and Dr. B. B. Dutt have also made their mark.

It will thus be seen that within the very short period of its existence—barely a decade—the College of Science in spite of the drawbacks referred to above has been in a position to give as good an account of itself as any similar Institution elsewhere.

⁶ This was written before the award of the Noble Prize.

CHAPTER XVI.

USE AND MISUSE OF TIME.

"Time is infinitely long, if we use it fully most things can be got within its compass."—Goethe.

"The passing of the hungry moments from sunrise to the deep profundity of night with its promise of another dawn avaricious for new labours, cannot be picked apart."—Mussolini.

I have often been asked of late years if I have not taken leave of my laboratory and my favourite science ; or, at any rate, if I have not been neglecting both. People are quite justified in making this query. Ever since 1921 I have taken a prominent part in spreading the message of khaddar and national education and have even been drawn into quasi-political movements. I have had to preside over several district conferences, as well as conferences organised by members of the so-called *depressed classes*. Over and above all this, I was called upon to place myself at the head of several relief operations in connection with the Khulna Famine of 1921 and the North Bengal Flood of 1922 etc. A rough calculation shows that I have travelled throughout the length and breadth of this vast continent several times over and have covered at least 200,000 miles during the last ten years. Then again, as I have elsewhere stated, I made my fourth voyage to England in 1920 and the fifth in 1926.

It was, as it were, as an apologia for my own mode of life that I recently delivered a lecture to a group of youngmen on "The Use and Misuse of Time", with Cowper's well-known lines¹ as the text, particularly with reference to how much a

1 "The lapse of time and rivers is the same :

Both speed their journey with a restless stream ;

* * * * *

But time that should enrich the nobler mind

Neglected, leaves a dreary waste behind."

man can do if he strictly follows a routine drawn up by himself. I am convinced that a man can multiply himself ten times, if he does the right thing at the right time. During my several tours in England and on the Continent of Europe I always took care to have my breakfast arranged at 7 or at the latest at 7-30, even in winter, so that I should have the rare luxury of enjoying an hour or two of reading before I went out. Formerly I could not read while travelling by mail trains as the jerking motion strained my eyes. But of late I have so accustomed myself to this mode of travel as to be able to read almost an hour at a single stretch. When I have to arrange my tour programme the first thing that I look to is an assortment of select books in big type. When I am in the Mofussil, *i.e.* out of Calcutta, I am naturally besieged by visitors of every description and I am *at home* to them ; but from noon till three—generally the hottest part of the day—scarcely any visitor would call, and then I shut myself in and have ample time to indulge in my favourite recreation. I can say with Carlyle that books are my chief recreation and I sympathise with the great philosopher when he was anxious to get rooms in London away from the crowd, where he could slam the door against vexatious intrusions. Indeed, Carlyle's vast reading and linguistic acquisitions were to a large extent due to his burying himself at Mainhill. Thus, before his departure for London, "There was, perhaps, no one of his age in Scotland or England who knew so much and had seen so little. He had read enormously—history, poetry, philosophy ; the whole range of modern literature—French, German and English—was more familiar to him, perhaps, than to any man living of his own age".

I have always regarded my study room as my sanctum but it is often a difficult task to preserve its inviolability. Even our educated men feel no hesitation in intruding, no matter whether one is intent upon a book or deep over a problem. Macaulay's voracious appetite for reading may also be mentioned here, "Literature has saved my life and my reason" he says,

"my mornings from five to nine (at Calcutta) are quite my own. I still give them to ancient literature". But such a feat is of course an impossibility with me. Even if I had the will I have not the strength for it. As I suffer from disturbed sleep I cannot read for more than an hour and a quarter in the morning at a stretch.

Newton was almost in a state of trance on the eve of his propounding the gravitation theory. Imagine what would have happened if he had been constantly disturbed by exacting visitors. Coleridge has left on record his bitter experiences in this respect—how, while he was in a reverie, he had composed two or three hundred lines of *Kubla Khan* ; or, *A Vision in a Dream*. On awaking he was putting them on paper, when he was suddenly called out on business and detained for more than an hour and, on his return to his room, he found to his no small surprise and mortification that he retained only some vague and dim recollections of the general purport of the vision. Emerson also bitterly complains: "At times the whole world seems to be in conspiracy to importune you with emphatic trifles.* * * Live no longer to the expectation of these deceived and deceiving people with whom we converse. Say to them, 'O father, O mother, O wife, O brother, O friend, I have lived with you after appearances hitherto. Henceforward I am the truth's.'"²

One must however make the best of the situation one is in and need not fret over it. Of late years it has been my lot to be literally besieged by people, especially youngmen, seeking information and advice on a variety of subjects, including the means of earning one's livelihood. Over and above this, I am flooded with letters from every part of India and my correspondents are sometimes exacting and inexorable. I am not in

² "Mussolini never liked to be disturbed when writing. * * * *
* * * Rossato tells a story which shows how he resented interruption. On his writing-table there lay a big revolver of twenty rounds and a large hunting-knife, with its sharp, gleaming steel blade exposed, whilst on his inkstand there was a small revolver * * * 'No one must enter here. The first that enters I will shoot'."

a complaining mood—as I know that I have brought much of such distractions on myself by my activities in various directions. I try to put the best possible face on it and emulate my *exemplar*, Marcus Aurelius, whose motto was, “Equanimity” and “whose meditations composed in the tumult of a camp are still extant” (Gibbon).

I advise my young friends to read carefully Benjamin Franklin's *Autobiography*. Born of poor parents, Franklin had to earn his daily bread by dint of hard labour as a printer's apprentice. He had very little schooling, “as at ten years old” to quote his own words “I am taken to help my father in his business, which was that of a tallow-chandler and soap-boiler” but he made up for it by his own efforts. As he could not afford to buy books he made friends with a book-seller. “Often I sat up in my chamber reading the greater part, when the book was borrowed in the evening and to be returned in the morning, lest it should be found missing.” “During his spare hours he used to give full scope to his bookish inclination after having worked in composing the types and printing off the sheets”. By and by he attained success as a printer “for the industry of that Franklin is superior to anything I ever saw of the kind. I see him still at work when I go home from clubs and he is at work again before his neighbours are out of bed”. Franklin afterwards made experiments in electricity on his own initiative and account and is gratefully remembered as the introducer of the lightning conductor and proved, to quote his words, “the sameness of electricity with lightning”, acquiring thereby a European reputation in the field of science. It is not necessary to pursue here the career of the great Pennsylvanian who as a diplomatist of unrivalled tactics and persuasion, had a large share in bringing to a successful termination the American War of Independence.

Franklin has given us a key, as it were, to his happy participation in multifarious activities in the scheme which he drew up for his own guidance, “The precepts of order requiring that every part of my business should have its allotted time”.

Scheme.

Hours.

Morning.

The *question*. What good 5 Rise, wash and dress, *Power-*
 shall I do this day? 6 *ful goodness!* contrive
 7 day's business, and take
 the resolution of the day ;
 prosecute the present duty
 and breakfast.

8

9

10 Work.

11

12 Read or look over my ac-
 counts, and dinner.

Noon.

2

Afternoon.

3 Work.

4

5

Evening.

6 Put things in their places.
 The *question*. What good 7 Supper. Music or diver-
 have I done to-day? 8 sion, or conversation.
 9 Examination of the day.

10

11

12

Night.

1 Sleep.

2

3

4

To return to my own case. A few extracts from jottings in my diary of recent years will show how I have managed to go through my activities.

June 15/20.

7—8-30 A.M.: Read from *Jour. Chem. Soc.*, 9-12: at the laboratory, 1-30—2-30 P.M. again at the laboratory,—a run in a motor to the Pottery Works: back again by 4-30 P.M.: look in at the laboratory: 5—6 P.M. Zola's *Money*; 6-15—7-30 City College Council meeting: 8—9-30 at the *maidan* club.

Nov. 12/21.

Morning: read from Taine's *Hist. of Eng. Lit.*, about 9 at the laboratory, (saw agent Steam Nav. Co.); a little after consulted with the Manager, B. C. P. W. about some serious matters, also negotiated a loan—then saw Manager, Pottery Works; in the afternoon at the laboratory; important Directors' meeting of the B. C. P. W.

June 4/22.

My very versatility a source of my weakness. Early in the morning glanced right through *Jour. Chem. Soc.* for April, then took up *Modern Rev.*, read Lahiri's Article on "fiscal policy" and Molière's *Tercentenary* (by Kalidas Nag). At once my attention was captured by the latter.

June 25/22.

Since last year fresh additional labours imposed upon me by the relief operations in connection with the Khulna famine and the Charka apostleship. After all, work, *i.e.* congenial work, is pleasure.

Aug. 31/22.

What a life I have been living! Even my morning hours intruded upon. Streams of visitors and scholars on a thousand and one purpose incessantly pouring in. Of course, I can't complain—the khaddar propaganda again has added fresh burdens. Then the Pottery Works affair, followed by the Banga Lakshmi Mill meeting.

Oct. 6/22.

Once more unhappy Bengal in the grip of a terrible disaster and again I am called upon to organise relief work, however

incapable I might be to cope with the situation. The research work, strange as it may appear, goes on merrily—perhaps more fruitful results it has seldom been my lot to come across.

X'mas day 22.

Received proofs of valency of Platinum ; Laboratory work in full swing. 2 papers almost ready : materials for two more accumulating. The flood-relief pressure somewhat abated : hence toil in the laboratory brisk—enthusiasm unabated and zeal unflagging.

Dec. 27/22.

For the last few days suffering from insomnia : need not complain—but must patiently go through the cycle. Reading Huxley's *Controverted Essays*, a refreshing thing.

March 4/23.

In the turmoil of multifarious work of diverse nature the claims of Chemistry thrust aside. This morning glanced attentively through the contents of the *Jour. Chem. Soc.*—English Chemists evidently coming into their own after the distraction due to war condition—the activity characteristic of the British people in full swing. On the other hand the inertia and torpor of our countrymen affording food for serious and gloomy reflections.

April 4/23.

Read in the *Annual Report* (1922) on the "*Progress of Chemistry*" discussion on Ghosh's *Law* with almost parental interest.

Diary, Aug. 28/31.

From 6-45 to 9 at study.

9 to 9-30 Newspapers.

9-30 to 10 A.M. spinning.

10 to 11-45 in the Laboratory ; side by side attention given to Flood Relief work ; numerous letters, telegrams ; batches of school boys, students as also other donors bringing in their mites.

Meals and rest 12 to 1-30 P.M.

At 1-30 P.M. ran to Bhowanipore, went round the classes in the Padmapukur and South Suburban schools thanking the pupils for their help in connection with flood relief and exhorting them to render further help. Also visited Asutosh College and addressed a meeting in the open compound at 3-15 P.M. Returned at 3-45; signed numerous letters, money order receipts etc.; looked in into the Laboratory.

4 to 5 rest *i.e.* reading *Cromwell*.

At 5-30 sent a wire to Mahatmaji wishing God-speed to his mission and immediately ran to *Sikshamandir* and performed the opening ceremony.

At 7 P.M. in the *maidan* and stayed there up till 8-30 P.M.³

Many eminent authors and men of note have been known to work by fits and starts—to labour assiduously for 10 or 15 hours without break for days together and then lapse into inactivity. Spasmodic efforts have never been congenial to my nature. Whatever I have done I have done by slow persistent and systematic methods. The hare in the race with the tortoise was at length overcome by his crawling competitor. My most serious study or writing has often been finished in the morning before young people could make up their mind to shake off their lethargy under the folds of the blanket.⁴ I generally get

³ During his sojourn in Madras (1848-56) the poet M. S. Dutt gives his routine as follows:—

“My life is more busy than that of a school-boy. Here is my routine: 6—8 Hebrew; 8—12 school; 12—2 Greek; 2—5 Telugu and Sanskrit; 5—7 Latin; 7—10 English. am I not preparing for the great object of embellishing the tongue of my fathers?” *Life* by J. N. Bose, 5th ed., p. 164.

⁴ Cf. “In my youth,” says Count Buffon, “I was very fond of sleep; it robbed me of a great deal of my time; but my poor Joseph (his servant) was of great service in enabling me to overcome it. I promised to give Joseph a crown every time that he would make me get up at six. Next morning, he did not fail to awake me and to torment me; but he only received abuse. The next day after, he did the same with no better success; and I was obliged to confess at noon that I had lost

up at 5 in the morning and after a brisk walk and light breakfast sit down to my study at 6.

A few words may not be out of place here on the choice of books. Very few people read with a purpose ; they catch hold of a book at random simply because it happens to be ready at hand. "An indiscriminate literary voracity can scarcely contribute towards intellectual nourishment".

Railway travellers often repair to the book-stall and select a trashy novel, a shilling-shocker, and go right through it, the only thing which seems to rivet their attention being its sensational denouement. Novels of acknowledged merit as those of Scott, Dickens, Thackeray, Victor Hugo, Turgenieff, Tolstoi, have no doubt their uses. One should however be on one's guard in reading novels too often as thereby he loses his capacity and inclination for serious study. Light literature should only fill in the hours of relaxation. During the last five years and more my love of history and biography has got the better of my love for standard novels, so much so that I have begun to conceive almost a distaste for the latter. I approach a new book with a serious purpose, with feelings akin to those which agitate my mind when I am going to make the acquaintance of a person for whom I have conceived a high regard from a distance. Desultory reading has had no charm for me ; in fact, my reading has been confined to a

my time. I told him that he did not know how to manage his business ; he ought to think of my promise, and not to mind my threats. The day following, he employed force. I begged for indulgence—I bade him begone—I stormed—but Joseph persisted. I was, therefore, obliged to comply ; and he was rewarded every day for the abuse which he suffered at the moment when I awoke, by thanks accompanied with a crown, which he received about an hour after. Yes, I am indebted to poor Joseph for ten or dozen of the volumes of my works."

Again : Doddridge makes the following striking and sensible remarks on the subject. "The difference between rising at five and seven o'clock in the morning for the space of forty years, supposing a man to go to bed at the same hour at night, is nearly equivalent to the addition of ten years to a man's life."

limited range ; but over and over again I go through my favourite authors.

As Haldane puts it : "I had learned that if a book is really worth reading it must be read carefully through, and its standpoint mastered. That cuts indeed both ways, for it tends to reduce the number of books one can read".—*Auto.* p. 19.

Morley also very tersely puts it when speaking of Spencer :

"Among other innocent conventions that he resisted, he read no books. There is something no doubt to be said for this in one aspiring to found a system. There are men who have lost themselves by reading too much. They find that everything has been said. "It is after all the ignorant", observed the best read man of our time, "like Pascal, like Descartes, like Rousseau, who had read little, but who thought and who dared—those are the men who make the world go." *Recollections* : vol. i p. III.

I have already expressed my fascination for the *Vicar of Wakefield*. The characters in it are so very *human*. Two of the most illustrious writers of the nineteenth century are unstinted in their admiration for it ; says Scott : "We read *The Vicar of Wakefield* in youth and in age—we return to it again and again, and bless the memory of an author who contrives so well to reconcile us to human nature." Goethe records : "It is not to be described the effect which Goldsmith's *Vicar* had upon me just at the critical moment of mental development. That lofty and benevolent irony, that fair and indulgent view of all infirmities and faults, that meekness under all calamities, that equanimity under all changes and chances, and the whole train of kindred virtues, whatever names they bear, proved my best education."⁵

There are gluttons of books or as Macaulay calls them "intellectual voluptuaries." These people go on devouring

⁵ J. S. Mill also "thinks Goldsmith unsurpassed" as far as style is concerned. Morley : *Op. Cit.*, p. 66.

one volume after another without ever pausing to think over their contents and these bookworms soon part with their thinking capacity or critical judgment. With them it is only the question of the number of books consumed, nothing else matters.

Let me give here one of my personal experiences. In 1920 while I was in London I read right through J. M. Keynes' *The Economic Consequences of the Peace*, which had just been out. The author saw at a glance with the vision of a prophet the miserable economic plight to which not only middle Europe but along with it England and America as well will be reduced if the terms of reparation so pitilessly exacted from Germany were not moderated.⁶ As I am revising this portion for the Press (April, 1932) I find that Keynes' prediction has literally turned out to be true and I have lately been re-reading this book carefully.

"The friends thou hast and their adoption tried
Grapple them to thy soul with hooks of steel."

Literally—"My never-failing friends are they
With whom I converse night and day".

In order not only to while away the idle hours but to add to the enjoyments of life one should cultivate some hobby suited to one's tastes. Among those who have enriched science or extended the bounds of knowledge by pursuing it as a recreation may be mentioned the names of Lavoisier, Priestley, Scheele and Cavendish. Diocletian and Washington in their old age after retirement from their arduous labours found solace and contentment in the seclusion of rural life and the practice of agriculture.⁷ So did Garibaldi. Others have

⁶ Cf. "If the General Election of December 1918 had been fought on lines of prudent generosity instead of imbecile greed, how much better the financial prospect of Europe might now be." *Op. Cit.* p. 135.

⁷ Cf. The Emperor Diocletian, after his abdication, retired to his country seat. "It is seldom that minds long exercised in business have formed any habits of conversing with themselves, and in the loss of power they principally regret the want of occupation. The amusements

found supreme delight in doing good to humanity, alleviating the distress of the poor, in comforting the stricken, and in various grades of social service ; in a word, in philanthropic work. Others have taken to the cultivation of fine arts, *e.g.* music, painting, etc. In this matter no hard and fast rule can be laid down as tastes differ as much as do the idiosyncrasies of man. It has been well said that Satan always finds some mischief for idle minds. Such occupations as have been indicated are the best antidote against seeking pleasures in frivolous pursuits or amusements. One should be self-contained and contented.

The more dependent you are upon others the more do you invite miseries ; most people as soon as their day's occupation is finished are hungry for the club or for the company of prattlers and gossip-mongers, and hour after hour is whiled away in their society. They simply kill time. Above all cultivate contentment. In my younger days I read in Addison's Essays:—"I have always preferred cheerfulness to mirth", cheerfulness indeed acts like a lubricant to the wheel of life. There are those who lose their temper over a trifle, who are apt to fret and foam at the slightest provocation. Such people are always miserable. I envy those who can dismiss an

of letters and of devotion, which afford so many resources in solitude, were incapable of fixing the attention of Diocletian; but he had preserved, or at least he soon recovered, a taste for the most innocent as well as natural pleasures, and his leisure hours were sufficiently employed in building, planting, and gardening. His answer to Maximian is deservedly celebrated. He was solicited by that restless old man to reassume the reins of Government and the Imperial purple. He rejected the temptation with a smile of pity, calmly observing that, if he could show Maximian the cabbages which he had planted with his own hands at Salona, he should no longer be urged to relinquish the enjoyment of happiness for the pursuit of power."—Gibbon : *Decline and Fall of the Roman Empire*.

Cf. also : "There was no height of power, of rank, or of opulence, to which he (Temple) might not have risen, if he would have consented to quit his retreat, * * * . He rejected the most tempting invitations, and continued to amuse himself with his books, his tulips, and his pineapples, in rural seclusion."—Macaulay : *History of England*.

unpleasant thing with a hearty laugh.⁸ Always try to put the most charitable interpretation on other's motives. Jealousy is also to be avoided; it gnaws into one's vitals. It does no harm to one against whom you nurse it, but it corrodes your own heart. Envy and malice rob one of contentment. There is again an intimate connection between the mind and the body. He who harbours ill-feeling forgets that his peace of mind is at an end.⁹

"In discussing the influence of habits of business upon literary pursuits, Mill considered that nothing promoted activity of mind more. He found, in his earlier days at least, that he could do much more in two hours after a busy day, than when he sat down to write with time at his own command. Bagehot is a conspicuous example of the union of admirable composition with close attention to practical affairs. Gibbon, as we all know, says he never found his mind more vigorous nor his composition happier than in the winter hurry of London society and parliament. Grote, on the other hand, who worked eight hours a day at his *History of Greece*, found the demands of his bank too severe before he got two of his eight volumes out. One of the most agreeable novelists of our day was a hard-worked servant of the Post Office, and sat down as punctually to tell the stories of Barchester at five or six o'clock every morning, as if the whole of his masters at the Treasury had been on the watch." Morley's *Recollections*: vol. i p. 125.

As a specific instance of how much literary and even scholarly work can be done in the midst of pressing and exacting business call, the life of George Grote, the historian of

⁸ Cf. "He (J. S. Mill) laid it down somewhere that though seriousness must be the *fond* of all characters worth thinking about, yet a certain infusion of the laughing philosopher is a prodigious help towards bearing the evils of life, and must have saved many a one from going mad." Morley's *Recollections*: Vol. i p. 54.

⁹ Cf. When thou wishest to delight thyself, think of the virtues of those who live with thee; for instance the activity of one, and the industry of another, and the liberality of a third, and some other good quality of a fourth.—Marcus Aurelius.

Greece, may be cited. About the age of ten he passed to the Charterhouse and when sixteen he was snatched away by his father, "who had only contemptuous discouragement for his intellectual pursuits," and apprenticed to his bank. He remained there 32 years and became head of the firm in 1830 ; but he devoted, however, all his leisure to literature and political studies. He completed, it is true, his *History* (12 Vols.) on his retirement from the banking house in 1843 ; but he conceived the idea of writing it as early as 1822 and all along had to read extensively for collecting his materials. Grote was withal one of the most untiring promoters of the new London University, and was a member of Parliament for several years.

The saying that the busy man has always ample time at his disposal is well borne out by my own experiences. It is the lazy and indolent and unmethodical who complain of lack of time to attend to every day routine work not to speak of urgent matters.

Cromwell fights the battle of Dunbar, one of the bloodiest in the campaign, on September 3, 1650 ; the whole day is almost taken up in the fight as also in the pursuit of the fugitive enemy. "On the morrow (*i.e.* 4th September) the Lord General sits down to write seven letters in succession ; one as a despatch of some eight pages addressed to Speaker Lenthall. Amongst these one is also 'for my beloved wife Elizabeth Cromwell' and still another for his 'loving brother Richard Mayor' " ; father-in-law of his son Richard.—*Cromwell* : vol. ii pp. 209-25.

The battle of Worcester was fought on the evening of Wednesday 3rd September, 1651 ; "anniversary of that at Dunbar last year" ; Cromwell "did lead the van in person, * * * and the deadliest tug of war begins. * * * The fighting of the Scots was fierce and desperate. My Lord General did exceedingly hazard himself, riding up and down in the midst of the fire". It was "as stiff a contest for four or five hours, as ever I have seen".

On the same day at ten o'clock at night *i.e.* almost immediately the battle was over, Cromwell writes an account of it to Speaker Lenthall "being so weary, and scarce able to write, yet I thought it my duty to let you know this much". *Ibid.* pp. 325-329.

I cite these particular instances only to show that great men have at their command serene composure and imperturbable mood and being methodical are accustomed to look to many things side by side and do justice to each. Carlyle always given to hero-worship calls Cromwell the *largest soul in England*. There may be differences of opinion on this point. The poet in fact regrets that Cromwell was not "guiltless of his country's blood".

Still another example: Mustapha Kemal Pasha, who is almost adored by his countrymen as the saviour of modern Turkey, is a warrior, statesman, reformer all rolled into one; he finds time to work out everything in connection with the affairs of Angora and discuss important measures with his ministers and inspires them. And what is the secret of his manysided activities? Miss Grace Ellison has summed it up in a few lines:

"He [Mustapha Kemal Pasha] has a power of concentration which is remarkable, and can apply it immediately to any subject, emptying his mind of whatever may have occupied it the moments before".—*Turkey To-day*, p. 18.

Let me again bring forward another example—and a living one—and an embodiment of non-violence and bloodless warfare. Mahatma Gandhi because of his method and punctuality, in the midst of his preoccupations, carrying on momentous correspondence and interviews with the Viceroy and the Home Secretary, flooded every day with hundreds of telegrams and letters—receiving callers of diverse descriptions and giving them audience—writing articles for *Young India* and so on—yet finds time to write letters on his own initiative to

his numerous friends and fellow-workers in the cause to which he has dedicated himself. I have always been shy of intruding myself upon his precious time and do not remember to have ever written to him during the last couple of years and more ; yet on reading my appeal in the papers to the philanthropic citizens of Bombay he finds time to write two lengthy letters to me and my righthand man in the Flood Relief operations, and this morning August 30, 1931, while I am penning these lines my attention has been drawn to his parting message to Bombay.¹⁰

Nature has, though to a limited extent, endowed me with the gift of "emptying my mind of whatever may have occupied it the moments before" ; and this has enabled me sometimes to attend to half-a-dozen things in the course of the day.

If any one were to ask me what period of my life has been most active? I would unhesitatingly answer: From sixty onwards. During this space of time I have toured throughout the length and breadth of this vast peninsula at least 200,000 miles in opening Exhibitions, National Institutions and preaching the gospel of Swadeshi ; over and above that I have been to Europe twice. But a glance at my daily routine of work will convince any one that in spite of my numerous pre-occupations I have never allowed my research at the laboratory to suffer though the universal opinion in India is that I must have bade farewell to it long ago. It is true that when one's activities are spread over a broad area, scientific work cannot possibly receive that degree of attention, which a secluded recluse can afford to bring to bear upon it. In order, however, to make up for this sort of diversion of my energies, I have

"I hope people of the Bombay Presidency will go to the rescue of flood-stricken Bengal and send their contributions to Dr. P. C. Rây." Associated Press of India, Bombay Aug. 29, 1931.

been under the necessity of curtailing my holidays and vacations. Formerly it was my custom to spend fully a month of the summer vacation in my native village ; of late I have to be contented with only flying visits to several places at Khulna or elsewhere. The whole of the Long (summer) Vacation *minus* 12 to 15 days as also the Puja, Christmas and Easter holidays have found me glued to my laboratory. In fact, the several trips to and from Bombay, Madras, Bangalore,¹¹ Lahore, Nagpur &c., are regarded as portions of my holiday recreations. It will thus be seen that I have always taken good care to make up for these diversions or distractions. Throughout the last 21 years it has been my custom to spend on an average a couple of hours in the *maidan* in all seasons of the year, which practically does away with the necessity of recouping my energies by an exodus to the hill stations. Moreover, I have always avoided work requiring continuous strain, which may tell upon health and which certainly calls for prolonged rest or absolute abstention from arduous labours.

During the last half a century in consideration of my health I have had to abstain from any and every kind of mental labour after 5 or 5-30 in the afternoon except when I have sojourned in the cold climes and even then I have only indulged in reading light literature for an hour or so before going to bed. My intimate connection with so many industrial concerns has no doubt taxed a good deal of my time and attention, but by contrivance I have always found it possible to dovetail all such activities in with the special call on my time—I mean research. In fact, the rigid adherence to the daily routine has left me ample time for the pursuit of my favourite occupation. I can well realise the truth of Goethe's saying that "Time is infinitely long, if we use it fully most things can be got within its compass."

¹¹ During the past four years I have been regularly attending the Council meetings of the Institute of Science three to four times every year.

Indeed, I can fully enter into the spirit of what the great Zoologist Louis Agassiz says about the use of the most precious gift of God to man.

"Not until he was ten years old did Agassiz attend a public school. His early education was obtained at home. Then with his brother Auguste he spent four years at a boys' school in the nearby town of Bienne. But Louis was a genuine boy, and the long vacations brought him his happiest days. In them he could indulge his love for all outdoors." The Bengali lad has yet to be awakened to such love of Nature.

"I cannot understand why anybody should be idle ; much less can I understand why anybody should be oppressed by having time hang on his hands. There is never a moment, except when I am asleep, that I am not joyfully occupied. Please give to me the hours which you say are a bore to you, and I will receive them as the most precious of presents. For my part, I wish the day would never come to an end."—Agassiz.

The veteran chemist, the late Sir Edward Thorpe, in reviewing my *Essays and Discourses* under the caption : "The Life-work of a Hindu Chemist" took occasion to observe :

* * * "It was to be expected, therefore, that Sir P. Chandra Rây should, as he expressed it, sooner or later find himself 'the property of anybody and everybody,' and be called upon by various educational institutions, by conferences, and by the periodical Press and leading newspapers interested in the social reform and development of industrial and political life of India to address his countrymen on subjects which so closely affect their national welfare and prosperity."

* * * "A small, spare man, in feeble health, and a confirmed dyspeptic, he will be spent in her service."—*Nature*, March 6, 1919.

Had he been alive to-day in view of what I have written above he would have been probably the first to realise that under the guidance of a all-wise Providence my life-work was not yet finished. During the last thirteen years it has been my lot to work harder than in any other period of my career.

Anyone, who takes the trouble to glance through the diary of my work, will not fail to find that there is no time

left for social intercourse with my many intimate friends. A quarter of a century or more ago I could afford to spend hours under the hospitable roofs of Jagadis Chandra Bose, Nil Ratan Sarkar, Pares Nath Sen, late Professor, Bethune College, Heramba Chandra Maitra, Pran Krishna Acharjyya and others ; in fact, the house of each of them was my home. But my throwing myself into the whirl of so many activities has robbed me of social amenities. The evenings, which are usually detailed off for such purposes, have been set apart for the *maidan* club. Circumstances have, however, even forced me to be a stranger, as it were, to my nearest blood relations. In fact, the companionship of my beloved pupils in the laboratory and elsewhere has made me forget everything else including the infirmities of age creeping upon me.

Reference has already been made to my avoidance of executive work involving heavy taxation upon time. During the last quarter of a century I have also scrupulously declined acceptance of examinerships ; confining myself only to looking over one or two theses or setting a paper. An examinership as an English colleague of mine used to say, no doubt, brings some grist to the mill ; but it entails dreary, monotonous drudgery as also loss of time and strain on nerves.

CHAPTER XVII.

LIFE OUTSIDE THE TEST TUBE.

I. QUASI-POLITICAL ACTIVITY.

Constructive work either in connection with my own science and its application to industry or in relation to the removal of economic distress has always engrossed my chief attention. In the midst of my activities in various directions my passionate absorption in Chemistry has been the redeeming feature in my career. It can never be said that I have deserted my first love to whom I have sworn life-long fealty and devotion.

I never considered that I was equipped by temperament and nature for playing the rôle of a politician. One whose best period in life has been mainly divided between the laboratory and the study finds it too great a taxation upon his time and energy to go about this vast country or rather continent and address meetings. The very physical strain it entails would render me *hors de combat* in no time. In fact, my fragile constitution and physique as also advancing age forbid my entering the political arena.

I have explained all along that I have been during the last half-a-century under a serious handicap in performing my tasks—I mean insomnia. Sustained work involving long continuous hours of strain and stress would at once upset me. Lord Rosebery who was Premier for a short time as successor of Gladstone had to retire into private life though “his countrymen again and again awaited a lead from one who was known to be a patriot.” From his *Biography* by Lord Crew we learn that “Lord Rosebery had brilliant gifts in abundance but he also had sleeplessness. In 1892 he told the Prince of Wales he felt he was disqualified from public life by ‘long loneliness and sleeplessness.’ In 1903 he wrote: ‘I have an absolute conviction that were I return to office, I should once more be sleepless’.”

All the same I made frequent tours (1921-26) throughout the length and breadth of our land preaching the need of supporting the National Schools which had sprung up and also the *khaddar* and of removing that great curse of Hinduism—untouchability. I had also to respond to several invitations to preside over the district conferences at Khulna, Dinajpur, Cuttack &c., as almost all the prominent political leaders were then lodged in jail. During the height of the non-co-operation movement I declared—*Science can afford to wait but Swaraj cannot*. This assertion scarcely needs elaboration. When the great Stanislaw Cannizzaro was about to commence his career as a chemist being fully equipped for the task the events of 1848 at once determined his choice. He shut up his laboratory and shouldered his musket as a volunteer. A stray bullet might have at once killed him in the course of the first skirmishes as in the case of John Hampden. During the late Great World War many eminent scientists obeyed the call of the hour and cheerfully sacrificed their lives and limbs, including Mosley, an eminent English physicist. Of him Prof. Millikan, the great physicist of the University of Chicago writes :

“In a research which is destined to rank as one of the dozen most brilliant in conception, skilful in execution, and illuminating in results in the history of science, a youngman but twenty-six years old threw open the windows through which we can now glimpse the subatomic world with a definiteness and certainty never even dreamt of before. Had the European war had no other result than the snuffing out of this young life, that alone would make it one of the most hideous and most irreparable crimes in history.”

On August 10, 1915, Louis, the only son of Henri Moissan, the great French chemist, who prior to the outbreak of the War was an assistant at the college made famous by his father, died on the field of battle.

As we in India are living in a critical time, the following sound observations have an especial significance.

“Yet it can be said with certainty that the price of inertia is always, in the long run, the loss of a civic sense in the multitude. Men who insist that some particular injustice is not their responsibility sooner

or later become unable to resent any injustice. Tyranny depends upon nothing so much as the lethargy of a people. Autocracy is born above all of the experience that it need not expect active resentment against injustice. This is the inner truth of Thoreau's famous sentence that 'under a government which imprisons any unjustly, the true place for a just man is also a prison.' For unless he is insistently protestant, his acquiescence in the injustice is assumed. His silence makes him in fact the jailer; and the powers that he rely on him because they know that the inert acceptance he has displayed in the past is a proof that his conscience is dead. The bad employer, the savage justice, the corrupt statesman, these exercise their authority only because they have not been challenged in the past. Let that challenge once be made forthrightly and, where one man has been bold, a thousand are prepared to follow him. And where a thousand are prepared to follow, those whose profession is the doing of wrong think twice before the act."—Laski: *The Dangers of Obedience*, pp. 19-20.

In politically advanced countries like England and America, where democratic principles have slowly gained ground, whole-time workers have devoted themselves to public life; even there the complaint has been raised that men of science and literature by keeping aloof from politics are retarding the progress of the community. A thoughtful writer complains:—

"It has long been proclaimed that the scientist or philosopher should live apart from the herd, like a hermit or a moral refugee. But this was only a confusing of loneliness with objectivity. For speculation in the realm of thought it is enough that one be simply disinterested or objective. The modern masses are not closed to ideas, but they want them and understand them only within the limits of their own experience or of their most constant and vital preoccupations. The problem is not to level all thought down to mass tendencies; but to answer the questions posed by the masses. If the pure scientist or philosopher who is capable of originality and leadership refuse to answer, then some slave to the crowd, some low journalist or venal politician, avid of popularity and profit, will answer instead."—Lucien Romier: *Who Will be Master—Europe or America?* pp. 172-73.

Plato puts the case in a nutshell when he says that the penalty which good citizens have to pay by not taking part in civics and politics is to be ruled by bad men.

Although as I have said I did not openly join the political movement yet I could not live quite apart from it. I was thus

often dragged on to political platforms. At the session of the National Congress held at Coconada (1925), I was present both as a delegate and a visitor. Being presented with a complimentary ticket (distinguished visitor's card), I was assigned my seat on the dais next to the President, Mohammed Ali. On the second day's sitting, at the time of the afternoon prayer (namaz) it was necessary that some one should act for him during the interval ; ordinarily the Chairman of the Reception Committee would have been asked to do so. Mohammed Ali, however, without consulting any body invited the opinions of the delegates and suggested that I should fill in the gap. The proposal was received with acclamation and thus for ten minutes or so I was the occupant of the Chair. This humorous incident has its counterpart. When Lord Haldane had returned from his deputation at Berlin, King Edward invited the German Emperor to pay him a State visit at Windsor in 1907. He was of course accompanied by some members of his Cabinet as matters of High Policy had to be discussed. On one occasion "The Ministers were divided, and the argument grew so hot that I interrupted it and said to the Emperor that it was not right that a foreigner, who was outside his Cabinet, should remain present. But the Emperor had a keen sense of humour, and besides he wanted to have my support. 'Be a member of my Cabinet for to-night and I will appoint you.' 'With all my heart, sir.'

I suppose that I am the only Englishman who has ever been a member of the German Cabinet, though it was only for a few hours."¹

Immediately after the termination of the Great War, India was on the tiptoe of expectation that some great boon would be conferred on her for her signal services and contributions during the supreme crisis, which England had gone through. To their utter dismay and consternation the people of India got as the first tangible reward for their loyalty the

¹ *Autobiography*, ed. 1831, p. 221.

Rowlatt Act under which any citizen could be spirited away by the police and kept in detention for an indefinite period without trial. Naturally there was a widespread agitation. A mass meeting was held at the Town Hall—the principal speaker being C. R. Das, who was just then coming to the fore. My friend Satyananda Bose called on me one afternoon and suggested to me that I might go a little earlier to my usual *maidan* constitutional walk so as to be present at the meeting. It was thus only by an accident that I happened to be one of the audience. The ground floor of the Town Hall where the meeting was held was packed to suffocation and a large crowd had also gathered on the southern flight of steps as also on the broad street. C. R. Das in order to be audible to the vast seething mass of humanity took his stand on the front of the steps. Naturally I was at the back of the audience and occupied a very inconspicuous place. Somehow or other I was recognised and pushed forward by those about me and placed alongside of Das. Every one was anxious that I should have my say ; what then happened is thus described by a local daily :

“Mr. C. R. Das then asked Dr. Sir P. C. Rây to speak on the resolution. Dr. Rây rose to speak and then was witnessed a scene which I shall never forget. For a few minutes Dr. Rây could not utter a single syllable as ovation after ovation,—cheers after cheers, shouts of “Bande Mataram” greeted the venerable Doctor. Dr. Rây began by saying that he had not the remotest idea that he would have to address the meeting even for a single moment. He came as a mere spectator. He was a man of the laboratory but he felt that there are occasions—the rest of the sentence was drowned in deafening cheers—² Dr. Rây repeated that he felt that there are occasions which demanded that he should leave his test-tube to attend to the call of the country.

² I reproduced from memory the following lines as a prelude to what I was going to say “One thing I do beseech you to avoid—a single case of investigation in the absence of the accused.”—Lord Morley to Lord Minto : *Recollections*, II, p. 280.

“So grave was the danger to our national life that even Dr. P. C. Rây left his work in the laboratory and joined the meeting to raise his voice of protest against the obnoxious Bill.” *The Amrita Bazar Patrika*, Feb., 1919.

Reference has been made about the signal service rendered by India during the War and Rowlatt Act is her reward. Below is given a brief account of what India has done for England in distress :

In a memorandum drawn up by Lord Islington, Under-Secretary of State for India, in connection with “India Day” (Oct. 5, 1918), there is a brief review of the contribution of India to the war under three main heads : (A) Men, (B) Material, (C) Money. I cull the important items :

(A) Men : The total number of men, British and Indian, sent overseas from India between August 4, 1914, and July 31, 1918, is 1,115,189.

(B) Material : It is not too much to say that had the resources of India not been placed at the disposal of the Empire the difficulties of the war would have been enormously increased, if indeed its prosecution on the present scale would have been at all possible. To organise the material resources of India, not only for supplies for Indian troops in Egypt, Mesopotamia, and elsewhere, but also to supply to the United Kingdom many essential requisites for the prosecution of the war, a special Munitions Board has been set up in India.

(C) Money : In January, 1917, the Government of India, with the assurance of the support of the people, offered to the Imperial Government a contribution of £100,000,000 towards the cost of the war, which was gratefully accepted.

The heavy military disbursements which the Government of India have undertaken to make by no means exhaust their share of the financial burden which the war imposes. India is the financial pivot of the British Empire in the East.

Then on the occasion of the incarceration of Mr. C. R. Das who was the spirit and soul of the Non-co-operation movement in Bengal, I felt impelled to write the following letter to Mrs. Das, which was reproduced at that time in the newspapers :
“My Dear Sister,

I am so much choked up with feelings that I can scarcely give vent to them. Ever since his historic defence of Aurobindo

Ghosh, which will always rank as one of the classics in the State trials, your husband has loomed large before the public. His unbounded charity, his lofty patriotism, his high idealism, his heroic and chivalrous defence of the weak have always evoked our admiration. Although I do not see eye to eye with him in some matters, I have always felt attracted to him, and I do not at all wonder that his striking personality should capture the imagination of Bengal, or for the matter of that of Young India. Even those who differ from him in political matters cannot withhold their admiration for the unparalleled self-sacrifice he has made. Our hearts go out to Chittaranjan in the hour of his trial. I know the limitations of the expert, and from my position of isolation and detachment, I am afraid, I fail to realise the full significance of his life's mission. Has not the poet said?

“The man of science is fond of glory and vain
An eye well practised in nature but a spirit bounded
and poor.”

Possibly, exclusive, lifelong devotion to my favourite subject has blurred my vision and my *spirit* has become circumscribed. I can assure you, however, dear sister, that in serving my favourite science I have only one idea in my mind, namely, that through her I should serve my country. Our aspirations are the same. God knows, I have no other object in my life.

Cheerfully and heroically you have been bearing your tribulations, and have set an example to modern Bengal and womanhood, which has been rarely met with since the days of Rajput glory.

I sincerely hope that the dark clouds which have overshadowed our dear Motherland will soon be dispelled and your husband restored to us.

Yours sincerely,
P. C. Ray.”

II. SOCIAL SERVICE ACTIVITY AND RELIEF WORK.

Floods in Bengal—The Khulna Famine—The Great North Bengal Flood—The Recent Flood—A Leaf from the Administrative Methods followed in India—The Whiteman's Burden—Lessons of the Voluntary Relief Organizations.

In 1921, shortly after my return from the fourth visit of England, a famine broke out in the southern portion of the district of Khulna adjoining the Sunderbans. As long as I was in Calcutta I did not realise the seriousness of the situation. When I went home during the summer vacation in May I had ample ocular evidence of the acute distress caused by the failure of crops during two successive seasons. The Magistrate-Collector, the *ma bap* (lit. the father and mother) of the people committed to his charge, remained unmoved. There was, however, a newspaper agitation based upon the reports of the correspondents on the spot. The local people moved in the matter and approached the public at large. The Magistrate—the ear and the eye of the government—however made light of it, and from his distant and serene headquarters refused to take notice of the cry of distress, and issued a notification which has earned an unenviable notoriety. A few lines of it may be quoted here: “Almost in every village fruit grows profusely, fish can be caught in the khals by the smaller boys, and milk is to be had almost for the asking.” Everyone who has any experience of Indian famines knows full well that the unusual cheapness of the milk is an index of the acuteness of the famine. Parents would even deprive their suckling babes of their meagre allowance of milk, so that by selling it they might have a small quantity of rice; but there are no purchasers of milk, as a famine in India now-a-days means a famine of money. It is also needless to remind the reader that

in the Sunderban regions fruit trees simply won't grow and are conspicuous by their absence. It may be necessary here to premise that in India, whenever a calamity in the shape of a famine or flood breaks out calling for immediate succour, the Government from its sacred isolation and celestial heights at Simla or Darjeeling, or any other hill-stations, at first turns a deaf ear to the piteous appeal of affliction ; when, however, the agitation in the press and on the platform grows in volume and intensity and can no longer be ignored the "tin-gods" begin to grow a bit uneasy. But then they must have the *official* version to act upon. The Secretariat relies upon the divisional Commissioner, who is the conduit pipe for transmission of information. The Commissioner, again, relies upon the Magistrate of the district. The Magistrate in his turn sends for a report from the Sub-Inspector of Police, who derives his information from the Panchayet of the villages. The Panchayat in turn looks upon the village Chowkidar (watchman) as an infallible authority. The shrewd underlings have the knack of finding out what kind of report will be palatable to the superior authorities, and prepare it accordingly. Needless to say the Government communicate which is issued in the Gazette is based upon such "first-hand information". Had it been a free country, the Magistrate of Khulna or the railway agent responsible for the flood would not only have been severely dealt with, but the Government (*i.e.* the ministry) would have been turned out. But in India such things are simply a matter of course.

I felt it incumbent upon me at the request of my friends to take part in organising relief work and issuing an appeal for help. The response was most generous, the more so as the Government refused to take official notice of it. Active co-operation was rendered to me by some of the Khulna leaders, notably by Messrs. Nagendranath Sen, Jyotish Chandra Ghosh and Kunja Lal Ghosh, as also by a band of volunteers hailing mainly from the districts of Barisal and Faridpur.

As regards the North Bengal Flood in 1922, it is scarcely necessary to point out that it might have been altogether avoided or at any rate its intensity lessened if the prayers of the villagers had been attended to. But unfortunately in India such prayers or petitions go unheeded or receive but scant attention. It will be evident to any impartial reader that the Government was wilfully and criminally responsible for the great havoc. It is also to be noted here that the petition regarding railway embankment (*vide* correspondence below) from the villagers is dated fully a year before the devastation caused by the flood in the first week of October, 1922. The petitioners were ignorant village folks but they had the intelligence and shrewd commonsense to realise that unless the narrow culverts were replaced by bridges of long span they would always be liable to the calamity of a flood. And this is exactly what happened. The fact is that railway lines are constructed with an eye to the interests of foreign shareholders. The less the cost, the greater the expectation of dividend ; hence many a natural waterway is either filled up with earthwork or shortened so that narrow culverts may serve the purpose.¹ The *Ananda Bazar*, Nov. 21, 1922, in its editorial notes about the Railway embankment as the cause of ruin to the country observes :

We have already written several articles in support of the proof, that the railway line has been the source of untold woes and misery to the people of North Bengal. The inhabitants round about Adamdighi and Nasaratpur (the two railway stations, north of Santahar) had petitioned the Eastern Bengal Railway authorities, through the Magistrate of Bogra, urging that a bridge be constructed between the above-mentioned stations in place of the narrow culvert for the outflow of the immense volume of water from the uplands after the torrential monsoon deluges. Below is appended a copy of the letter from the railway agent to the Magistrate :

¹ I write this from my experience gathered from an inspection of the railway line from Raninagur to Nasratpur immediately after the flood had subsided.

N. 1356-V.W.

From

E. B. RY. AGENT, LT.-COL. H. A. CAMERON, C.I.E.

To

THE MAGISTRATE OF BOGRA.

Calcutta, Oct. 28, 1921.

Sir,

With reference to your letter dated April 25, 1921, enclosing a petition 2 from Umiruddin Joddar and the inhabitants of Adamdighi and the adjacent villages, praying that a bridge be constructed between the stations Adamdighi and Nasaratpur, I beg to inform you that after due enquiry we are of opinion that there is no need for a bridge in the aforesaid place.

(Sd.) Illegible,
on behalf of the Agent.

Memo. No. 1773-J.

Office of the Magistrate, Bogra.

The 3rd Nov., 1921.

Copy forwarded to Umiruddin Joddar and others for information.

(Sd.) Illegible.
On behalf of the Magistrate.

Writing about the obstruction of the natural drainage Dr. Bentley said :—

“All drains converge into rivers. The rivers ultimately discharge themselves into the Padma and the Jumna. The slope of the country is from six to nine inches. Unfortunately, the engineers who are responsible for the construction of the District Board roads and Railway lines in this region did not trouble their heads about the natural drainage of the country. The roads and railway lines are insufficiently provided with culverts and waterways. *The water itself is not an evil, but it must be quickly drained off.* The fact that floods have become almost annual visitants clearly show a disorganisation of the catchment areas of the river system of Bengal, due to the faulty construction of railways.

2 Subhas Chandra Bose sent the above petition to the writer from Santahar. A copy of it was sent to the press. The *Ananda Bazar Patrika* published a translation of it in Bengali and commented on it. The original letter could not be traced.

The problem before us is to see that the natural system of drainage is restored, and after every rainfall, water drains off as quickly as possible. The river system ought to be surveyed with a view to discovering how the basin of each river has been obstructed by railway embankments. Wherever necessary, a sufficient number of culverts of a new type must be inserted. . . . With such a system, as I suggest, Bengal can keep her roads and railways, and largely eliminate malaria, improve her water supply, and, at the same time, prevent risks of dangerous floods. This disorganisation of the country by the roads and railway embankments is the cause of the trouble. . . . The railway embankments and the District Board roads, to a certain extent, are responsible for the flood."

Surely, there never was, nor ever will be, a more direct contradiction of the statements of the Government by one of its own functionaries.

The great flood of 1922 owed its origin to the heavy rain that fell during the week beginning 22nd September, all over the basin of the river Atrai, which is a tributary of the river Brahmaputra (or Jumna as it is locally called), and into which most of the other small streams of the region discharge their waters. The news of this great calamity reached Calcutta in a rather strange manner. The Mail train starting from Darjeeling on the 25th instant reached Parbatipur the next morning and could not proceed further, because the lines some miles south of Parbatipur were reported to be under water, and the news of the breach at Akkelpore became known to Railway officials. The passengers thus stranded had to stay at Parbatipur for four days and were then sent to Calcutta by another long and circuitous route. Among the luckless passengers travelling by this train was one of the editors of the *Statesman*, and he was the first journalist in Calcutta to publish this appalling news in an eloquent article illustrated with photographic representation of the breach and the temporary sea into which the vast area had been converted in no time. In the meantime, on receipt of some private communications, Mr. Subhas Chandra Bose had proceeded to the affected area to make a personal survey of the situation. From

there he wired simultaneously to me, the Congress, and Bengal Young Men's Association, of which Mr. Bose was a Vice-President. An appeal was issued through the Press to the Calcutta public to hold a meeting at the Indian Association Hall where a committee was to be formed and necessary steps to be considered. The meeting was largely attended by representatives of various communities, both European and Indian. It was marked by unusual enthusiasm. I was elected President of the Bengal Relief Committee which had just then been formed. At first I was unwilling to shoulder such a heavy responsibility, as I had only recently laid down the begging bowl with which I had been out in connection with the Khulna Famine. But people would not listen to me and so at last I had to agree to the proposal most reluctantly.

To give an idea of the damage done by the flood it may be useful to quote the evidence of the *Statesman*, which can by no means be charged with particularly pro-Indian bias.

"The Government estimate as to loss of and damage to property is held to be in almost every respect, a considerable underestimate. In the Bogra district the loss has been estimated by the Assistant Director of Public Health at over one crore of rupees. In the village of Talora alone, seven small huts out of full 200 dwellings have been left standing.

"After a visit to the Naogaon Sub-division, I am on good authority to say that the damage to property and destruction of cattle is much more serious than is indicated by official estimates. The Naogaon sub-division has a population of something over five lacs and fully sixty thousand dwellings have been destroyed within its boundaries by the flood.

"Practically all the *Ganja* crop is helplessly damaged, while only an infinitely small part of the growing rice crop will be available this season."—(*The Statesman*, 15th Oct.).

The Government *communiqué* itself admits that the area affected in Rajshahi is three times the area in Bogra, and the loss of houses and property is more severe. Taking the estimate of the Assistant Director of Public Health as the basis, the loss in Rajshahi and Pabna combined, can be safely put

at 5 crores of rupees, the total loss in the flooded area thus amounting to about 6 crores.

The spacious buildings of the University Science College were used as the office of the Committee, and the usual stillness of the College was broken this year by a wave of unusual activity. Crowds of men and women were seen constantly coming in and going out. Not less than seventy volunteers, including some eminent professors of Calcutta Colleges and the University, had to work regularly from morn till midnight. Separate rooms and halls were used for locating the various departments,—the General office, the Treasurer's office, the Stores, the Despatch department, and Stations for receiving donations, in cash and in kind. A novel feature of the Calcutta office was the formation of a Publicity Bureau whose duty was to supply the public with authentic and up-to-date information. Appeals were sent to all parts of India, and even to England, France and America. This vast organisation worked on with clock-like regularity and precision. It was because every worker—in Calcutta as well as in the flooded area—could find ready sympathy in his rich and generous heart that this organisation could work like one man, composed though it was of men of various types and different temperaments.

The success of the Bengal Relief Committee is mainly due to the fact that with a far-sighted policy it worked, from the very beginning, upon the principle of co-operation and co-ordination. As soon as the staggering news of the terrible catastrophe spread over the country, innumerable relief-societies cropped up eager to help the distressed. But for the unifying influence of the Bengal Relief Committee, there would have been constant overlapping in certain areas, and consequently unavoidable neglect in others ; and thus a vast amount of energy would have been frittered away. With an intelligent perception of the situation, the Bengal Relief Committee invited the Congress Committee, Bengal Chemical & Pharmaceutical Works, Bengal Social Service League, Bengal Youngmen's Association and others to send representatives to

its working committee, so that by constant consultation and mutual understanding, overlapping and duplication of work might be prevented. The invitation was readily accepted, and different areas were entrusted to different organisations. Thus was evolved a system, efficient but elastic, in which units could work under a central authority without any detriment to their individual initiative and energy, a system, in which there was real unity but no mechanical rigidity.

Subhas Chandra Bose, whose heart always melts at the sight of suffering humanity, hied there as stated before on his own initiative to learn at firsthand the nature of the havoc. So likewise did Dr. J. M. Das Gupta, who at a heavy sacrifice of his professional income stayed at Santahar for sometime to organise medical aid. Jatin Ray of Bogra, a selfless worker, hastened there in a boat improvised from sides of rusty kerosine oil tins, with a few maunds of parched rice to render first aid. Satis Chandra Das Gupta, Superintendent, Bengal Chemical and Pharmaceutical Works, Ltd., with a force of volunteers from his factory, also hurried to the scene of devastation.

After a couple of months or so Subhas Chandra was called away by his Chief, C. R. Das, to help in his political mission. His place was taken by Dr. Indra Narayan Sen, than whom a more selfless and devoted worker it has seldom been my lot to come across. But the brunt of the relief-work devolved upon the shoulders of Satis Chandra Das Gupta whose prodigious capacity for work and organising power won the admiration of all. Mr. Das Gupta worked on the Bengal Relief Committee from its very inception and was in charge of its general management. At last, the whole burden of the Bengal Relief Committee practically devolved on him. In spite of his heavy responsibility, he found time to visit the Atrai Centre, at least, once or twice a month. With unflinching devotion he rendered splendid services, and did not leave his post till the activities of the Bengal Relief Committee were finally over.

I feel uncomfortable, nay embarrassed, at the prominence

given to my name. It is, however, fair to add that I acted more or less as an ornamental figure-head. The success of the relief-operation was mainly due to the loyal and never-failing help rendered not only by my colleagues of the College of Science notably by Professors P. C. Mitter, Megh Nad Saha and others but also by active helpers like Prof. Niren Chowdhury and his friends who ungrudgingly placed their services at my disposal.

The Special Correspondent of the *Manchester Guardian* writes from the flooded area of Northern Bengal, Nov. 11³:—

“GOVERNMENT’S PRESTIGE LOWERED.”

“I have been spending a few days in the flood devastated region of Northern Bengal, and have heard and seen a good deal that is instructive.

“Northern Bengal is in the Ganges delta, low-lying rice land intersected by river channels and traversed by railway embankments which run athwart the natural lines of drainage. There was a very heavy rainfall from the 25th to the 27th of September and the water rose to an unprecedented height, submerging the cultivated lands and topping and finally reaching the railway embankments. The area affected was about 2,000 square miles of country, with a population of over a million. Mercifully the loss of human life was comparatively small. Not more than sixty people were drowned, but throughout 700 square miles of a thickly populated countryside more than half the houses collapsed, all the fodder was ruined, and at least 12,000 heads of cattle perished. Further, the main crop was utterly, or all but utterly, destroyed over an extent of 500 square miles. The losses in the rest of the affected tract were less serious, but by no means negligible.

³ I may be permitted to add here that the *Manchester Guardian* has always been singularly lucky in choosing its correspondents. When in 1897 “the greatest famine of the century”, to quote Sir Anthony (now Lord) Mac Donell, overtook Northern, Central and a considerable portion of Western India, it was the graphic letters of Mr. Vaughan Nash, which awakened the British and even Indian public to the magnitude of the calamity. The *Manchester Guardian* correspondent on the present occasion, I learned afterwards, was Mr. J. T. Gwynn, who had served in South India in the Civil Service for several years. He was thus thoroughly conversant with the ways of the bureaucracy. The graphic account reproduced here was widely published at the time in the Indian newspapers. It was afterwards in a slightly curtailed form incorporated in his book, *Indian Politics*.

WHY GOVERNMENT IS BLAMED?

"When this calamity occurred the Government were well above flood level in the hills above Darjeeling. (They are still there by the way). The early reports seem to have given them no conception of the gravity of the situation. They were slow to move, and when at last they began to take action, the action taken was inadequate, and what they gave was given ungraciously, reluctantly, and under pressure of public opinion. That at least was the impression left on the minds of the general public of Bengal.

SIR P. C. RÂY.

"In these circumstances a professor of chemistry, Sir P. C. Rây, stepped forward and called upon his countrymen to make good the Government's omissions. His call was answered with enthusiasm. The public of Bengal in one month contributed three lakhs of rupees; rich women giving their silks and ornaments, and the poor giving their spare garments. Hundreds of youngmen volunteered to go down and carry out the distribution of relief to the villagers, a task which involved a considerable amount of hard work and bodily discomfort in a malarious country.

"What greatly aggravated the public's dissatisfaction with Government's attitude was the fact that the disaster is generally attributed to the faulty design of the railways which is believed to make very inadequate provision for the passage of flood water. There is much evidence to support this view, but it was only after a lapse of a month and a half that Government promised an inquiry into the question.

A POWERFUL PERSONALITY.

"The enthusiasm of the response to Sir P. C. Rây's appeal was due partly to the Bengali's natural desire to score off the foreign Government, partly to genuine public sympathy with the sufferers, and very largely to Sir P. C. Rây's remarkable personality and position. Sir P. C. Rây is a scientist of world-wide repute. I do not think he can be said to be an orthodox Non-Co-operator, but he is a very strong Nationalist, and a very strong critic of Government. He is also a real organiser and a real teacher. I heard a European saying, 'If Mr. Gandhi had only been able to create two more Sir P. C. Râys he would have succeeded in getting Swaraj within this year.' A Bengali student told me, 'If any Government officer or any of the Non-Co-operating politicians had called for subscriptions the public would not have given even three farthings. But when Sir P. C. Rây calls everyone knows that the money will be spent and well spent, and not wasted.' I had the good fortune to see

Sir P. C. Rây in Calcutta at his College of Science and I think I can understand why his fellow-countrymen feel so much confidence in him. One day he was gloating over vast and disorderly-looking stores of clothes, old and new, brought by Bengali sympathisers to his laboratories. The volunteers were busy under his eye, bringing order out of disorder, and arranging for the despatch of the clothes to the scene of the relief operations. The next day I caught a glimpse of him assisting two young students to carry out some experiment in chemistry, and it seemed to me there was affection between the teacher and the taught. When I heard him talking about the Government I felt that I would sooner serve under him than be criticised by him. He is too warm-blooded and energetic a man to make a perfectly fair critic. But any man who feels aggrieved by his criticism has at least the satisfaction of knowing that unlike so many critics, Sir P. C. Rây would never shirk taking on the job himself if the chances were offered him, and that if he did take on the job he would be likely to put it through about as well and perhaps a little better than anybody else.

"When I reached the affected villages, a month and a half had elapsed since the flood. The waters had subsided, but the extent of the damage done was still very obvious, and the various relief agencies were hard at work. For the largest and most business-like looking agency was Sir P. C. Rây's Bengal Relief Committee. This is not a political organisation but I did not find any one among its up-country workers who was not a Non-Co-operator.

THE RELIEF WORKERS.

"In charge of its relief operations was a young Bengali who passed into the Indian Civil Service a couple of years back, became a convert to Non-Co-operation, threw up his appointment, and has since been in training for politics. Under him were a couple of hundred volunteer workers, mostly between the age of 17 and 25. A few were clerks in merchants' offices whose employers had granted them leave to enable them to take up the work. There were also doctors for the medical work, but the great majority were regular Congress propagandists and organisers, many of them boys who had left Government schools and colleges at Mr. Gandhi's call. Among them I found a young No-Co-operating Indian Christian and a young Hindoo who had been interned on suspicion of complicity with the pre-war terrorist conspiracy. These two were both men of some ability occupying positions of trust.

"Altogether the organisation looked pretty good, and the spirit of the volunteers was excellent. The men really do go into the villages, see things for themselves, and make detailed inquiries regarding losses

from the villagers on the spot. Then they bring the villagers what they need or give the villagers written order authorising them to draw what they need from conveniently situated centres. Much food, medicine, and clothing have thus been distributed to the villagers, and a beginning is being made with the distribution of housebuilding material and cattle fodder. Other minor volunteer relief agencies are also at work, and the Government have done and are doing a good deal. But my enquiries on the spot suggested that there was some justification for the popular complaint regarding Government's attitude, and they made it quite clear that Government have lost immensely in prestige over the whole affair, and that Non-Co-operation has won what Government have lost, thanks to the fine work of Sir P. C. Ray's volunteers.

WARNING UNHEEDED.

"I saw and talked with all sorts and conditions of men; minor Indian Government officials, Local Board officials, small lawyers, zamindars, railwaymen, Non-Co-operating volunteers, and villagers. There was a general consensus of opinion to the following effect. Six years ago the metre-gauge railway was converted into broad-gauge. The waterways were then drastically curtailed—the curtailment was nearly 50 per cent. of their capacity in some sections. This was responsible for a serious flood in 1918, a minor flood, in 1920, and finally for the present disaster. Government had been deaf to the warnings of local officers, and now Government's railway experts are reluctant to admit the extent of the damage done and the part which the railway embankments played in holding up the waters. Government have missed and the Non-Co-operators have seized a great opportunity for winning the affections of the villagers. The Bengal Relief Committee has been prompt and generous. Its workers have gone to the villages and put heart into the cultivators. The railway and its officers have been most prompt and generous in rendering help, and the local district officers have on the whole worked hard and well though some (not Europeans, I am glad to say) exhibited an indecorous jealousy of the non-official organisations.

"But Government's organisations compared unfavourably with the organisations of the Bengal Relief Committee. Four different Government districts and four different Government departments were concerned with the relief work, yet no single whole time officer was appointed to co-ordinate the work and to make it easier for Government and volunteer agencies to pull together. Some departments sent men and let them idle away their time, while other officers had neither men nor money for the most necessary work. It is rumoured that it cost

Government Rs. 20,000 in officer's pay and travelling allowance to distribute Rs. 20,000 worth of seed. This last is an estimate, not an audited figure, but with my own eyes I saw an agricultural expert busy checking the work of two agricultural experts who were busy doing nothing, so I should not be surprised if the estimate proves to be under the mark.⁴

A STATIONMASTER'S EXPERIENCE.

"I met a stationmaster who had been living with his wife and newly-born child at a country railway station. With the first rise of the waters his wife was driven out of her quarters and compelled to take refuge in the ticket office. This refuge she shared with four snakes. The stationmaster counted twenty snakes on a little tree that grew on the platform just outside his window. All the snakes in the country had been flooded out of their holes and were seeking refuge, like the men on any dry ground that showed above the flood. A further rise of the waters warned the stationmaster that it was time to go up higher. He crossed the line to the goods shed, piled up sacks of tobacco and rice as high as he could get them to go, and took refuge on top of this platform with his wife and child. That was at 1 p.m. At 8 p.m. the water had reached them and was still rising, and they gave up hope. At 10 p.m. the child died, and thereafter the waters began to fall. If that was the experience of a stationmaster living in a solid masonry building what sort of a night did the villagers pass, with their mud huts crumbling and collapsing as soon as the waters rose above the flood? Many of them took to the trees and spent two or three days without food before they could be taken off in boats. I heard of a small local landholder who had been doing rescue work on his own in a boat. The second day after the flood had reached its height, he found one house still standing and in it two hens, a jackal, a hare, and two men, not to mention the usual snakes.

"One member of Government took occasion the other day to enunciate the proposition that Government is not a charitable institution. If he had been round seeing the effect of the flood for himself and hearing the experiences of the sufferers, he would have waited for a more suitable moment at which to give expression to this thought.

⁴ The correspondent is by no means out in his guess. High officials have in confidence often assured me that whenever Government undertakes Relief Work on a large scale full 50% of the money finds its way into the wrong pockets. Cf. F. H. Skrine : *Cal. Rev.*, Aug. 1928, pp. 141-47.

WHERE THE GOVERNMENT FAILED.

"The fact is the Government were over-cautious when it was the moment to be generous, even lavish. The villages had lost most of their annual income and a great proportion of their small stock or capital, and they had been frightened almost out of their wits. They badly needed someone to come round and put heart into them to assure them of sympathy and of the help they needed to set them on their legs again. The local officers did what they could but the Government did not give them the money or the promises they needed to reassure the cultivator. They left it to the Bengal Relief Committee to do this and the Non-Co-operators will reap, and will deserve to reap, the fruits of the good seed sown by Sir P. C. Rây's volunteers. All the local officers tell me that the volunteers have won the gratitude of the villagers, and that the villagers will follow their lead at the next election. I visited one of the minor relief centres with a Government officer. The villagers there told us plainly that "Gandhi Maharaj" (no longer "Mahatma Gandhi", but now "Gandhi Maharaj") and his followers had saved the countryside, that they would vote for Gandhi Maharaj at the next election, that they would like to replace the European officers by Indian officers who would understand them and have sympathy with them like Gandhi's volunteers, and that they prayed that Swaraj would come soon to make them happy. I spent two other mornings in the villages, one day in company with a Non-Co-operating volunteer and the other day with an experienced Indian Government official. Everywhere I got the same impression. If the villagers had doubts before, they have made up their minds now. The Non-Co-operators, they believe, are their real friends, and not the Government officers. The Government officers themselves confessed sadly that this is now the prevalent opinion in the Bengal villages.

"I was the more impressed because the villages I saw were not "politically advanced" villages. This is a backward tract, and the villagers were poor, ill-educated, simple minded, and timid folk, mostly Mohammedans.

"I said that Non-Co-operation had won a first class victory in the Punjab over the Gurukabagh affair. Here in Bengal, through this relief work, it has won another victory which is less striking but far more Mohammedans.

Mr. C. F. Andrews who visited the flood area more than once contributed a series of four articles to the newspapers from which a few short extracts are also appended below :

"We passed many villages on the way during our long walk and I could see at once the admirable work that had been done by the volunteers of the Bengal Relief Committee in rebuilding the houses of

the peasants. By far the greater part of the reconstruction had been carried out through their aid. It has been a perpetual wonder to me during the days that I have been visiting the flooded area to see how far their operations have reached. I have been in very remote villages far distant from the railway line and have seen there the same good work being carried, which I witnessed that early morning near the Atrai railway centre. The workers appear to have been ubiquitous, and their work, as far as I could judge, has been both economical and effective. The more I have seen of it, the more I have been impressed by it. Indeed it would not be too high praise to state, that under the inspiration of Dr. P. C. Ray and his able co-adjutors, Mr. Das Gupta, Dr. Sen Gupta, Professor S. N. Sen Gupta, and others, it has been one of the noblest efforts made in modern India on behalf of distressed humanity.

The experience to the volunteers themselves has been unique. Many of these have already told me, that they have found their whole outlook upon life changed by the knowledge of human suffering and endurance which they have gained. Every volunteer I have seen in the midst of his work has been unstinted in his admiration of the patience and cheerfulness of the villagers in this hour of calamity.

"At Santahar itself, I went carefully into the methods of the work carried on by the head-quarters staff of the Bengal Relief Committee. The thoroughness and business-like character of the undertaking struck me more than ever. It was like the head office of some big business firms. Files and records were kept and all accounts were registered and audited with admirable regularity. From my own general observation, it is easy to assure the public,—if any assurance is needed,—that there has been no waste at all in the expenditure of the money given for relief purposes. The cost, also, for distribution and inspection has been reduced to a minimum. There is no danger of a single rupee of the money collected being mis-spent.

"* * I have not met a single person yet on the spot, who does not believe that the natural drainage of the country has been very seriously hindered by these new railway embankments. It must be borne in mind, that the water in the Atrai-Patisar area of the Rajshahi District was held up for over a month, and that it was just that length of time which caused the complete failure of the crops.

"I cannot conclude this series of articles without again paying my warmest tribute of admiration, both to the organisers of the Bengal Relief Committee, in Calcutta, and also the workers on the field. Very many of these have been labouring all through, from the very first days of October up till now, and the strain of the work has been continually

increasing. Not a few of the volunteers on the field have fallen sick owing to the severe character of the work and the impossibility of obtaining proper food and rest while carrying out relief from village to village. These devoted workers have been nursed back to health at the camp hospitals, and have then returned bravely to their duty without any further break."

The great North Bengal flood described above was regarded as the most terrific of its kind in the memory of the living generation. The account of it was written six or seven years ago. In September of this year (1931) another flood, unprecedented in its fury, havoc and magnitude and beating all past records, overwhelmed a considerable portion of North and East Bengal. It came down like an avalanche and swept away all before it.

Professor Megh Nad Saha, who himself took an active part in the Flood Relief operations of 1922, in the course of an illuminating article entitled "Catastrophic Floods in Bengal and How They can be Combated", observes in the introductory portion :

"A few years back Bengal was in the grip of a catastrophic flood, and a similar calamity recurred last year.

"From newspaper reports, it appears that the whole of the Brahmaputra basin covering an area of 2,5000 sq. miles was visited last year (1931) by the most terrible flood within living memory. As the population in this part is nearly 800 per square mile, the total number of persons affected is not less than two millions, *i.e.*, about four hundred thousand homesteads. From the writer's experience of such floods (he comes from the flood-stricken districts) and from newspaper reports of the havoc caused by the flood, it is estimated that the total loss in money to Bengal will not be less than eight to ten crores of rupees if we suppose that the average value of a Bengal homestead is from Rs. 200 to Rs. 250. But there is every chance that this might be an underestimate."—*Modern Review*, Feb., 1932.

I was again called upon to organise relief for the sufferers ; and the *Sankat Tran Samity* (lit. aid-to-the-afflicted-committee) undertook to render what little help it could. As on the previous occasion in response to our appeal contributions poured in ; owing, however, to the universal trade depression and the tightness in the money market, although the response was

generous, the amount of money collected was considerably less. It is my pleasant duty to record here that during the Khulna Famine (1921) and the North Bengal Flood (1922) as also on the present occasion I have received material and moral help from the European missionaries ; some of them have raised funds and placed them at my disposal ; while others have voluntarily gone to the affected areas to see with their own eyes the state of affairs and have not hesitated to publish in the papers their personal experiences.

This time also, the office of the *Sankat Tran Samity* was located in the premises of the Science College. It was again my good fortune to enlist the services of Messrs. Satis Chandra Das Gupta, Panchanan Bose, Kshitis Chandra Das Gupta and others who worked from morning till midnight even at the sacrifice of their health. A noble band of volunteers hailing chiefly from Contai and Tamluk (Midnapur) rendered signal service. Each and one of them like the *unknown warrior* braved malaria and cholera which were raging in the affected areas in earlier stages. School and College students and the general public as well responded to the call of humanity in raising funds. For a few months it was a happy sight to see even little boys and girls steaming to the Science College with their collections.

The Government as is its wont turned a deaf ear to the cry of the distressed. As the columns of the daily papers were full of vivid pictures of dire distress, the Honourable member of the Executive Council who has the portfolio of famine, flood etc., made a tour in his special saloon carriage and steam launch and visited the afflicted region. His eyes and ears were of course his subordinate officials'—including the Commissioner of the division, the Magistrate of the district and his own Civilian Secretary. It is unfortunate that this time there was no correspondent of the type of Mr. Gwynn to present a graphic narrative of the catastrophe. It is only necessary to premise that the flood area was already since last year in the grip of acute distress. It was mainly a jute growing centre ; owing to the

ridiculously low price of this agricultural produce, the mainstay of the locality, famine condition already prevailed there.

But the Government as was once described by one of its members, is not a "charitable institution" and there is no room for charity in it. As such it is quite in keeping with its tradition to belittle the extent of havoc created by the recent floods. In the course of the communique the Revenue Member says:—

"There is no famine at present though some gratuitous relief is necessary and is being supplied by Government and non-official organisations." * * * *

Again he sees no starvation—

"It is satisfactory that actual experience of the present conditions in the flooded areas shows that the alarming reports circulated by correspondents in the newspapers are exaggerated. Though some people require relief even now, no one says that the number is large."

An English missionary's testimony:—

"To the Editor of the *Statesman*, (Sep. 29, 1931).

I read with considerable interest the Government communique relating to the flood situation in Bengal published in your issue (Dak Edition) of Wednesday, September 23. It appears from the communique that the Hon. Member in charge of the Revenue Department made a lightning tour of seven days in the districts of Pabna, Bogra and Rangpur and from that amount of "actual experience" had the temerity to publish, as a Government communique, his opinions as to the present conditions and prospective needs of the flooded areas mentioned.

One may admire his courage but certainly not his discretion. The report as far as it affects Pabna District, especially Bera and the area on the Bhil side of Banwarinagar, is very misleading. I have recently returned from a tour of over three weeks in these areas administering flood relief from private sources, and I found that in many places, especially in the Bhils and near the Ichhamati and Chiknai rivers, both the Aus and Aman crops had been submerged by the floods and the poor villagers were desperately trying to salvage what they could of the partially grown crops, which were then only useful as fodder. The Hon. Member says, "In the areas visited there was no sign of starvation." Possibly not where he and his party were on the launch. If he had spent even a day or two and penetrated into the villages as I did, he would have seen enough to satisfy him that there are hundreds of people who are in a state of semi-starvation. In many places I found cases where one meal in three days was considered a happy circumstance. I can give names of villages visited and number of people assisted,

where extreme distress prevailed. * * * I regret that advice has been given to conserve the monies collected for flood relief. Now is the time that food relief should be distributed and all the funds collected and more will be needed for this purpose as well as for clothing and medicines. I would therefore suggest that the Government continue to help with loans for seed, and ploughing animals, many of the latter having perished in the floods; and that publicly subscribed funds be concentrated on the immediate needs of the people.—Yours etc.

(Rev.) ALLAN J. GRACE."

Pabna, Sept. 26.

Mr. H. S. Suhrwardy who also visited the affected area in the course of a lengthy letter to the *Statesman* (Oct. 22, 1931) observes "This is the greatest calamity that has overtaken Bengal within living memory."

"An Indian correspondent" of the *Statesman* (Sep. 30) thus comments on the above letter :

"The letter of the Rev. Allan Grace of Pabna regarding the condition of the people of the flooded area published in the *Statesman* of Tuesday last must have placed the Revenue Member of the Government of Bengal in an embarrassing position. The missionary gentleman has unreservedly challenged the assertion of the Revenue Member and pointed out that the statement in the Government communique that 'there was no sign of starvation' was incorrect. The personal experience of Mr. Grace showed that the people in some places considered themselves fortunate if they could get one meal in three days' time. An assertion like this in face of the Government communique, if it had come from an Indian source, would certainly have been rejected as mischievous propaganda of the political agitator, but it is doubtful if the Government or any one else will have the courage to class Mr. Grace with him. His bold and timely contradiction has shown the hollowness of the statements issued off and on by the Government, and the pity of the whole situation is that this particular communique was based on the investigation conducted by a Bengali member of the Government who has spent the best part of his life on the bench of the highest judicial court in the country * * *."

The writer, I am afraid, misses his point. It was only by an accident that the Revenue Member happened to be a Bengali. It is the *system* or the *method* of administration which is at fault ; and this I have already drawn attention to.

Instead of swelling the account by quoting too many instances it suffices to insert here the graphic report of Mr. Satis Chandra Das Gupta, who personally toured round the affected area and walked on foot mile after mile in spite of his poor health to see things with his own eyes :

"I have seen an entire village population except one family living on roots of water lilies. They did not know what rice is for weeks. There have been deaths in the village which is ascribed to starvation. The women were in rags, the men weak and depressed and the children in low state of health. At the time I visited, a number of little children were searching for roots of water lilies and in the huts the women were boiling the same food. This is the state of the village Chakdah in Basail thana of Tangail, and there are hundreds of villages in the affected area where conditions are not better. Where water lilies do not grow or are not abundant they are eating cores of plaintain plants. If living on cores of plaintain plants or the like is not starving then there is no starvation."

Mr. Kshitish Chandra Das Gupta, who also visited the affected area, to see the acute distress of the people, went direct inside the kitchen and began exploring what meals they were having.

"On entering a house, Kshitish Babu peeped into a room and saw two sugar-canes in a corner. The householder immediately pointed out that those were not sugar-canes but stalks of plantain leaves. They are skinned and are therefore looking like sugar-canes. They are *imitation sugar-canes*. When the little ones cry for food, and we have nothing to give them, we give these cut to small sizes as candy. They chew and suck the water. This keeps them engaged and they get exhausted and stop crying. The father pointed out what the children threw off after sucking. Kshitish Babu has brought these. These are being exhibited at the Science College. * * * *

"Next Kshitish Babu entered a house where on getting into the kitchen he found two little children in a corner secretly eating something. He wanted to know what it was and brought out the plate. It was a little sticky lump which the children were eating with great avidity. The father explained that it was wild 'kochu' (*arum Indica*) stems boiled and then mashed. It had no salt even. While the father was talking, a daughter of six came up and quickly began to eat from the plate. She was asked to keep something for the smaller ones, but before the sentence was finished she gulped in one morsel all that remained and

finished it. The two boys began to cry in despair. That was the last morsel. The father brought out the pot from kitchen, there was nothing left."

The above few extracts taken at random from the daily papers throw a side-light on the methods of administration ; they tell their own tale and no further comments are needed.

And yet the poet of Imperialism with his wide experience of India does not shrink from writing such nonsensical stuff as reproduced below, evidently for consumption at "home" and abroad.

Take up the White Man's Burden⁵
Fill full the mouth of Famine
And bid the sickness cease ;
Take up the White Man's Burden
No tawdry rule of Kings.

In commenting on the North Bengal Flood of 1922 I have said that "it might have been altogether avoided or at any rate its intensity lessened if the prayers of the villagers" to replace "the narrow culverts by bridges of long span" had been attended to. The floods of the present year likewise would not have been so devastating if timely precaution had been taken in allowing passages for the accumulating mass of water. A very opportune brochure on this subjects has recently been placed in my hands. The writer has studied the subject with care and diligence and is thus entitled to speak with authority. I make no apology for making a few extracts from it.

"The great flood of North Bengal in 1922 was an eye-opener to many, and the eminent scientific genius of Dr. C. A. Bentley discovered in the badly constructed E. B. Ry. (especially the new Sara-Serajganj Section), with its narrow culverts and short bridges, the real cause of the ruinous water-logging. Increased incidence of malaria, cholera and other fell diseases is a secondary but sure effect of the stagnating floods.

⁵ As I am sending this portion to the printer (June 11, 1932) I am amused to read Sir Samuel Hoare's eulogy of the Indian Civil Service. I feel tempted to make a present of this chapter to our Indian Secretary as a fitting reply. When will this farce of the lion painting himself cease ?

But the victims generally belong to the poor mute peasantry whose existence is itself an anachronism in these vociferous opulent days. Recently the instructive lectures of the renowned hydraulic expert, Sir William Willcocks, have laid bare the hollowness of the policy pursued by the perpetrators of embankments. Yet, who is going to undo the evils, and when? On the contrary, it is quite likely that the embankments will be further strengthened as 'proof against future inundations'.⁶

The bold peasantry of North and East Bengal is the mainstay of the Government as it not only produces wealth in the shape of jute but is also the chief consumer of the imported British goods including textiles. Yet it is allowed to perish of hunger and starvation and drop down dead like so many flies.

The loss which the poor dumb, voiceless ryots have suffered is incalculable. In many places their cattle and very homesteads have been clean washed away. The Imperial Government appropriates all the export duty on jute and within the last few years it has coolly pocketed some 45 to 50 crores of rupees. If only one per cent. of this huge sum were released for the alleviation of their sufferings they might have been enabled to stand on their feet ; but then the orgy of waste and extravagance as shown elsewhere could not have been indulged in.

The lessons of the floods and famine that overtake Bengal every now and then are indeed manifold. They have afforded an excellent opportunity for a sort of national stock-taking and given us some idea of the difficulties against which we have got to fight for the progress of our national life, and the powers that are latent in us wherewith to fight them.

The Government of Bengal persistently tries to minimise the disastrous effects of the flood. It publishes a ridiculously low estimate of the flood-stricken area, and does not even

⁶ *The Bengal Flood, 1931* by Sailendra Nath Banerjee, Member, Board of Directors, Central Co-operative Anti-Malaria Society, Ltd., pp. 3-4.

think it necessary to open an All-Bengal Fund. Had the Government with its habitual red-tapism taken up the relief work, how much of the amount sanctioned for relief-work would have gone to swell the fat salaries and fatter T. A. bills of a whole army of officers? And, may be, more would have been spent on 'inspection' than on actual relief. *Voluntary organisations are certainly much cheaper and also more efficient, as they are not hampered by official red-tape.*

The floods have taught the youth of Bengal a lesson in discipline and determination. They have given us practical training in administering our own affairs. During previous floods, relief-works did not last for more than three weeks or, at most, a month, they partook of the nature of first aid only. The people were left to themselves as soon as the acuteness of the disaster was at an end. No attempts were made to restore them to their former condition, as far as practicable.

But, perhaps, the most significant fact about the flood is that it presents the problem of Hindu-Moslem entente in a somewhat more hopeful light. For the benefit of those who do not believe in the possibility of such an entente, let us point out that nearly 80 per cent. of the suffering population were Mussalmans, but nearly 99 per cent. of the help rendered—in men and money—came from the Hindus, and we are sure no Hindu ever grudged a single pice or a particle of energy that was spent on behalf of his Muslim brother. Political pacts and diplomatic compromises may or may not be successful, but this is unchallengeable that a lasting friendship can be permanently built on the strong foundation of such genuine sympathy and devoted service.

The flood has offered to our gaze a vision of United India. What is more important is that the flood has given us ocular demonstration of the fact that, inspite of her varying climates, different dialects, manifold dresses, rival religions, divergent outlooks, in the different provinces, India is to-day a living entity whose furthest limits palpitate with true humanitarian feeling even if only a part of it is adversely affected.

PART II

EDUCATIONAL, INDUSTRIAL, ECONOMIC
AND SOCIAL.

CHAPTER XVIII.

INSANE CRAZE FOR UNIVERSITY EDUCATION.

I. MASS-PRODUCTION OF GRADUATES.

"For myself, I have used only one big book. For myself, I have had only one great teacher. The book is life lived. The teacher is day-by-day experience."—Benito Mussolini.

"I believe University life does more harm than good to most men." Ramsay Macdonald.

"I am thankful to have had twenty-five years of the great University of public life."—Lord Haldane.

Repeated references have already been made to the degree-hunting mania of our youngmen. The feverish thirst for an academic hall-mark is the outcome of the ingrained belief of our students, and especially of their guardians, that a university degree is the only passport to a good job under Government, or to a professional career, *e.g.*, the law, medicine or engineering. The miserable straits to which the degree-holder has ultimately been reduced need not be dilated upon here. It is enough to mention that the market value of an average graduate, taking into consideration the vast number of the unemployed, does not exceed Rs. 25/- per month. Barely one per cent. of them is successful in life in the worldly sense, while thousands rush to their doom thoughtlessly. Many a young hopeful commits suicide when he is confronted with the matter-of-fact world, especially if he happens to be encumbered with the burden of a family.¹

¹ Cf. "A pathetic story was narrated at Coroner's Court at an inquest on Mrityunjaya Seal, aged 30. Seal had been out of employment for some time but recently he told his mother that he had secured a job. On the morning of March 14, he was found lying seriously ill and on being questioned he said he had poisoned himself. He died after removal to the hospital. In the letter found in his pocket the deceased stated he could no longer bear to see his mother and wife in privation. The story about his having secured a job was an invention to give some relief to his mother's feelings".—*Vide* Daily Papers, March 28, 1928. Such cases are cropping up frequently.

It is necessary that the attention of the country should be clearly drawn to the colossal waste of energy and national intelligence which we have allowed in the past by our scheme of University education. I shall allude to the most heart-rending analysis of the situation by no less a man than Mr. K. Srinivasa Iyenger who in the course of his Vice-Chancellor's speech in 1920 stated :

"Of 18,500 graduates of the University of Madras whose careers have been traced, some 3,700 have spent their lives in Government or administrative service ; about an equal number are engaged in the teaching profession, and nearly 6,000 have gone into law. Medicine has had only 765 devotees, Commerce only 100, and Science a tiny fraction of the whole, 56. You will search in vain, for any solid contribution to the sum of human knowledge amongst this magnificent number of 18,500" !

Again the Associated Press writes (1926) :—

"Owing to large influx of candidates about one thousand four hundred and fifty in number taking degrees in person this year, the Syndicate of Madras University has decided to hold two convocations next Thursday, the first being held at 2 P.M., presided over by the Vice-Chancellor and lasting for about half-an-hour. The second convocation will be held at 4-30 P.M. the same day at which the Chancellor will preside".

The two Universities of Calcutta and Madras have become two huge factories for mass-production of graduates. As if these were not enough, a number of new universities have recently cropped up in quick succession. In U. P. alone four new universities at Benares, Aligarh, Lucknow and Agra have been incorporated. The Madras Presidency, not to be behind-hand in this race, has got two more Universities—the Annamalai and the Andhra and the Central Province also claims its share in it. The Dacca University (Bengal) and the last if not the least, the Delhi University are also supplementing this work of mass-production of graduates and helping in this national waste of youthful energies. This inordinate, insane craze—almost a mania—for securing a degree has

been working infinite mischief—it has become almost a canker eating into the very vitals of intellectual life and progress. A serious drawback incidental to, and I am afraid, almost inseparable from the present ill-understood and mis-conceived notions of University training is that the youngman thus turned out betrays, as a rule, lamentable lack of initiative, resourcefulness and pluck when he is thrown upon the world and has to fight his way through it. While there is a gain in quantity there is a corresponding deterioration in quality. The average graduate is found to be a licensed ignoramus. In fact, in the course of several of my public lectures, I have not hesitated to say that the degree only serves as a cloak to hide the degree-holder's ignorance. He knows little and cares to know less beyond the irreducible minimum required for passing the examination.²

I am sometimes taxed by winners of academic distinctions with being unfair to them: "What", they exclaim, "do you want us to be so many Marwaris?" I tell them pointblank that I want nothing of the kind. I would stultify myself and my own life-work were I to preach the gospel of Marwari-ism in my declining years. What I strongly deprecate is that *every lad* should consider it the beau-ideal of his ambition to be the possessor of a degree. This point does not require elaboration. Some 25 to 30 thousand students are preparing for degree examinations under Calcutta University and two thousand more under Dacca University. The naked fact is unhappily lost sight of, that not more than two to three per cent. can ever be absorbed in the "services" and the professions. What of the

² Cf. "As a matter of fact the custom is to buy the highest degree which can be got for the money. B.A.'s can be got for Rs. 25/- (in which case they certainly have some other employment; probably they are studying law). A wholetime B.A. can be got for Rs. 40/- and he will be the weakest of his kind; a disappointed man, without energy or physique, willing to let things go as they please—if a boy wants to learn, let him, and if he wants to misbehave, let him."—Michael West : *Education*, p. 178.

remaining 97 per cent. or so, who enter the world utterly unfit for the battle of life? If by some process of elimination only a picked number, say 3,000 (i.e. one-tenth) would go up for the degree, even then there would be more than enough to fill up the vacancies caused by retirement and resignation, and supply research men in their respective subjects and also future administrators, munsiffs, deputy-magistrates and high officers in the clerical services.

The following extracts from the "Indian Statutory (Hartog) Commission" (Interim Report—Review of the Growth of Education in British India), Sep., 1929, will throw additional light on the subject.

"Law in India, as in other countries, is a profession in which there are a few prizes for the specially gifted, and many blanks; the average pleader finds it difficult to earn a living.³ Medicine and engineering can employ only relatively small numbers and the education of doctors and of engineers is expensive. There can be little doubt that one of the main attractions of the universities and colleges to men who have no taste for academic studies and insufficient qualifications for pursuing them, is the insistence on a university degree by Government and other employers as a passport to service. If Government were to abandon that requirement for all appointments in which it is not really needed, the pressure on the universities and colleges would probably be lessened. *We suggest that for many clerical appointments, Government*

³ At the Alipur (suburb of Calcutta) bar there are nearly 950 lawyers (B.L.'s and M.A., B.L.'s); I have been assured by some of the successful practitioners there that not more than 10 p.c., of them can earn a decent living. The pitiable condition of the *briefless lawyers* has become proverbial; e.g., *there are more lawyers than clients*.

At Barisal (a district town) I was told by a responsible authority that the average earnings of a pleader there did not exceed Rs. 15/- per month taking into consideration the vast number of starving briefless members. And yet the law colleges at Calcutta and Dacca continue to attract large numbers!

examinations comparable to the examinations of the Civil Service Commissioners in England and specially designed for the purpose they are intended to meet, might replace the requirement that candidates for these appointments should possess a university degree (the italics are mine). The appointments that we have in mind are purely clerical appointments and not appointments to the higher services for which the number of candidates is relatively small, and which do not materially affect the numbers in the universities.

“The Universities are overcrowded with men who are not profiting either intellectually or materially by their university training. To many hundreds, the years of training mean a waste of money and of precious years of youth ; nor is it only private money which is wasted. Each student in a university or college costs in every country far more than his fees, sometimes five or six times as much, and this money in India comes in part from endowments, but very largely from the public purse.⁴ If those students who now go to a university or a college without being really fitted for higher work, were diverted in large numbers at an earlier stage to careers better suited to their capacity, money would be set free for more profitable educational uses, and the training of the best men could be appreciably improved. The overcrowding of universities and colleges by men of whom a large number fail and for whom there is no economic demand has vitally affected the quality of university education”—*Ibid*, pp. 143-44.

⁴ Cf. “The average annual cost of educating a student, during the year, worked out at Rs. 755 in the Presidency College of which Rs. 301·5 was borne by provincial revenues ; at Rs. 431·9 in the Dacca Intermediate College, of which Rs. 343·4 was borne by provincial revenues ; at Rs. 515·5 in the Hooghly College, of which Rs. 427·2 was met from provincial revenues ; at Rs. 556·3 in the Sanskrit College, of which Rs. 509 was borne by provincial revenues ; at Rs. 535·3 in the Krishnagar College of which Rs. 435·6 was borne by provincial revenues and at Rs. 285·3 in the Rajshahi College of which Rs. 192·6 was borne by provincial revenues.”—(*Vide* “The report on Public Instruction in Bengal during the year 1927-28”).

II.—UNIVERSITY GRADUATES *vs.* SELF-TAUGHT MEN.

As a striking example of how much can be achieved in the literary world by a man of debilitated constitution, devoid of academic culture, the life of Henry Thomas Buckle, historian of *Civilisation* (1821-1862) may be cited. He was a very delicate child and under medical advice "his parents were careful not to over-stimulate his brain * * * he scarcely knew his letters at eight, and till eighteen had read little but "Shakespeare", the "Pilgrim's Progress" and the "Arabian Nights". He was sent to a school but was soon withdrawn from it.

At the age of seventeen Buckle's health had improved. In 1850 he could read nineteen languages with facility. Throughout his brief span of life a sense of the danger of overwork made him careful in not reading excessively at a time. Yet by methodical habit he had managed to read some 22,000 volumes. A reader of the *History of Civilisation* will be at once convinced that every page of it bears impress of mature thinking and vast erudition.

George Eliot, the great novelist, was at school between five and sixteen but had no college education. She was an immense reader and well conversant with German and Italian.

Elizabeth Barrett Browning, the poetess (1806-1861), was also practically self-taught. Her gift for learning was extraordinary ; at eight years old she had a tutor and could read Homer in the original holding her book in one hand and nursing her doll on the other arm. She was of delicate health all her life.

Macaulay, to whom the progress of Western Education in India is in no small measure due, was a great exponent and protagonist of the current belief that the "men who were first in the competition of the schools have been first in the competition of the world." "Look at the list of wranglers and of junior optimes", says he, "and I will venture to say that, for

one man who has in after life distinguished himself among the junior optimes, you will find twenty among the wranglers.⁵

"But the general rule is, beyond all doubt, that the men who were first in the competition of the schools have been first in the competition of the world".

Macaulay cites among others the name of Warren Hastings in illustration of his argument, but somehow he clean forgets Robert Clive, who was the despair of his parents, being, according to general opinion, voted a dunce, and who, to quote our authority, "was shipped off to make a fortune or to die of a fever at Madras". (*Essay on Lord Clive*).

This eminent writer will be made to rebut once more what he lays down. Speaking of his favourite hero, William of Orange, he says: "Meanwhile he made little proficiency in fashionable or literary accomplishments. * * * He was little interested in letters or science. The discoveries of Newton and Leibnitz, the poems of Dryden and Boileau, were unknown to him".

We read again of John Churchill, hero of Blenheim (afterwards Duke of Marlborough), that "his education had been so much neglected that he could not spell the most common words of his own language; but his acute and vigorous understanding amply supplied the place of book-learning".⁶ A descendant of his—a scion of the great historic family founded by him—Mr. Winston Churchill showed but poor promise of his future eminence as a school-boy. His father Lord Randolph was in despair about him, and was at one time anxious to seek for him a poor job in the Cape Government. It is true that till the time of Gladstone, Cambridge and Oxford culture was a characteristic feature of parliamentary government. "It was noted that when Palmerston made his Government in 1859 his Cabinet held six Oxford first-class men (three of them double-firsts), and out of the Cabinet four first-classes. Between 1850 and 1860—my Oxford days—the clergy held the education of

⁵ Trevelyan: *Life and Letters of Macaulay*, vol. ii, pp. 344-45.

England in the hollow of their hands. Their day was soon to be over." Morley's *Recollections* vol. i. p. 12. But even during Gladstone's life-time there were notable exceptions: John Bright was innocent of academic culture; and another great figure, Joseph Chamberlain, prided himself, to quote his wife's own words, on being a "man of business" (a screw manufacturer); W. H. Smith, who subsequently became the leader of the conservatives in the House of Commons, "had spent his youth and early middle-age in building up, almost literally with his own hands, and by none but the most honourable means, an immense business which supplied an urgent and growing public need, and which yielded him an ample fortune."⁷

Messrs. Burt and Broadhurst as representing labour constituencies made their presence felt in Parliament and the latter, if my memory serves me right, was a member of the later Gladstone Ministry. John Burns the Labour Leader was also a member of the cabinet in 1914.

Let me cite an instance from recent history of one who made his mark in the diplomatic services, namely, Sir Harry Parkes. "As an orphan lad he had joined relatives in Macao, had started in the consular service at fifteen, made a name in the capture of Canton and as ruler during its foreign occupation, and later as climax of adventures, had been tortured at Peking while the Anglo-French forces approached. Now at thirty-seven he was transferred to Japan as Minister"⁸. Two more remarkable instances are quoted below:

"Lloyd George's romantic triumph has been frequently likened to that of Disraeli. The two careers are manifestly similar in certain of their salient features. Unlike their predecessors in the British Premiership neither of them had had the advantage of a University training. On the contrary both of them were self-taught and had had to rely on their own native

⁶ Macaulay: *History of England*.

⁷ Oxford and Asquith: "*Fifty years of Parliament*", vol. 1, p. 164.

⁸ J. W. Hall: *Eminent Asians*, p. 161.

resources in the pursuit of the most cherished of their ambitions".⁹ Men risen from the ranks—often horny-handed sons of toil—devoid of academic culture have been known to develop remarkable powers of speech and soar to sublime flights in eloquence and rise to high eminence as statesmen. The subject has been admirably treated by Lord Curzon in his "Rede Lecture" (1913) entitled *Modern Parliamentary Eloquence*.

"Rather do I look forward to a revival in the country of eloquence in other and more popular shapes adjusted to the requirements of the times. Just as the oratory of the Georgian era was attuned to an aristocratic age, and that of the mid-Victorian epoch to middle-class ascendancy, so does it seem to me likely that the democracy will produce an eloquence, perhaps even an oratory, of its own. Should a man arise from the ranks of the people, as did Abraham Lincoln from the backwoods of America, a man gifted with real oratorical power and with commanding genius, I can see no reason why he should not renew in England the glories of a Chatham or a Grattan. His triumphs might be less in the Senate than in the arena: his style might not be that of the classics of the past. But he might by reason of his gifts climb to the topmost place where he would sway the destinies of the State and affect the fortunes of an Empire. Symptoms of such a power and style are sometimes visible in the declamations of Mr. Lloyd George.* * * In the House of Commons some of the Labour Members are eloquent speakers, notably Mr. Philip Snowden and Mr. Ramsay Macdonald".

Of the three speeches regarded as the supreme masterpieces and "part of the intellectual patrimony of the English-speaking race", two have been credited to the "backwoodsman" Abraham Lincoln especially the one delivered at the Gettysburg Cemetery on November 19, 1863.

During the late War, in America glib-tongued university

⁹ Edwards: *Life of D. Lloyd George*, vol. ii, p. 637.

men were often found wanting, and the services of matter-of-fact businessmen had to be requisitioned to meet the emergency.

"America seems to have followed Edison's advice in choosing 'men capable of doing work' for the heads of various organisations needed in connection with the war. We may well believe she picked her best men. Of these, Mr. Daniel Williard, who was in control of all transportation work, [and now President of the Baltimore and Ohio railway, one of the best in the U. S.] began life as a railroad labourer, then worked as an engine-driver and gradually rose to his present position. Mr. Vanderlip, a banker, was the Chairman of the British War Loan Committee in the United States. He then became assistant to the Treasury Secretary. He is the chief of the sixth biggest bank in the world. He began life as a reporter. Mr. Rosenwald who is in charge of 'war buying of finished products', began life as an errand boy. He belongs to a large mail order house in Chicago and is reputed to have an income of a million dollars a year. Mr. H. P. Davison, a banker, formed a Committee of bankers to help in war organisation. As he made £200,000 before he was twenty years of age, he could not have spent any undue time on his education".¹⁰ Hankin: *The Mental Limitations of the Expert*, pp. 55-56.

Similarly Lord Rhondda and Sir Eric Geddes as business magnates did signal service during the late war. The climax has, however, been reached in the present labour Cabinet: "Yesterday, we published a group photograph of the new labour Cabinet. Of its nineteen members five had a Public School or University education, and two others have University degrees

¹⁰ Cf. Many instances have been adduced of highly developed business ability in badly educated persons and we have even found reasons for suspecting that education, despite its advantages in other respects, checks the development of the instinct.—Hankin: *The Mental Limitations of the Expert*, p. 57.

* * What is required in education is to develop the boy's intelligence, not by prematurely stimulating his reason, but by stimulating his common sense by the methods above described."—*Ibid*, p. 127.

by examination. The days when Cabinets were drawn from Eton and Harrow seem finally to have passed. Of the last four Prime Ministers of England only one has been a Public School and University man, and more than two-thirds of the present British Cabinet have not the qualifications for a Calcutta Social Club. The way to high office in Great Britain no longer lies through the old channels. Men like Mr. Joseph Chamberlain, Mr. Lloyd George, Mr. Bonar Law, and Mr. Ramsay MacDonald have broken down the old tradition. The Universities will have to look to it—they cannot allow the belief to grow up that they are no longer turning out men of the highest ability”.—*The Statesman*, 29th June, 1929.

Mr. Ramsay MacDonald has given us a glimpse of his early career ; says he :

“The first employment I obtained was at the Cyclists’ Touring Club, addressing envelopes, at a wage of ten shillings a week. That, however, was only temporary work, and I have known what it is to walk about London with nothing in my pocket, with debt hanging over my head, and with nothing to do”.

Mr. MacDonald had a thirst for learning and was anxious to enter a University, but poverty stood in his way. “I however,” says he “do not regret not having been to the University ; in fact, I believe University life does more harm than good to most men”.

A few more specific instances may be quoted here : Sir Josiah Child, the Commercial grandee of the East India Company in the time of William of Orange (1691) “who in wealth, and in the influence which attends wealth vied with the greatest nobles of his time” began his career as an apprentice, sweeping one of the counting houses of the city. “But from a humble position his abilities had raised him rapidly to opulence, power and fame.” (Macaulay)

Recently, Mr. Will Irwin has written an account of the formative years of his classmate, President Hoover ; he says : “At the age of eleven he fed and curried his employer’s horses,

milked the cows, helped with the furnace and attended school. As office-boy at Salem, he suddenly developed a taste for engineering and the brand new Leland Stanford Junior University afforded him the opportunity of combining education and working for a livelihood."

From "Log cabin to the White house" is a common thing in America.

Some of the great masters of English literature owe little or nothing to an academic career. Johnson, Gibbon and Carlyle kept some terms at the universities but they have left only disparaging remarks of their obligations, if any, to their *alma maters*. Bernard Shaw himself perhaps the greatest of the living English writers tells us that he had to become a clerk at fifteen ; he therefore could not have secured the benefit of a college education.¹¹ Spencer also was practically self-taught. When his *Social Statics* was written he had none of the preparation known as academic culture. As he himself says "when with my uncle, from thirteen to sixteen, my acquirements were limited to Euclid, Algebra, Trigonometry, Mechanics, and the first part of Newton's Principia. To this equipment I never added".—*Life*, p. 417.

"To the University of Oxford I acknowledge no obligation ; and she will as cheerfully renounce me for a son as I am willing to disclaim her for a mother. I spent fourteen months at Magdalen College ; they proved the fourteen months, the most idle and unprofitable of my whole life.

* * * *

"In the University of Oxford, the greater part of the public professors have for these many years given up altogether even the pretence of teaching.

"It has indeed been observed, nor is the observation absurd, that excepting in experimental sciences, which demand

¹¹ H. G. Wells, though he studied biology under Huxley was once a draper's apprentice in a Portsmouth Store.

a costly apparatus and a dexterous hand, the many valuable treatises that have been published on every subject of learning may now supersede the ancient mode of oral instruction.

"If I inquire into the manufactures of the monks of Magdalen, if I extend the inquiry to the other colleges of Oxford and Cambridge, a silent blush, or a scornful frown, will be the only reply.

"As a gentleman commoner, I was admitted to the society of the fellows, and fondly expected that some questions of literature would be the amusing and instructive topics of their discourse. Their conversation stagnated in a round of college business, Tory politics, personal anecdotes, and private scandal : their dull and deep potations excused the brisk intemperance of youth.

"Dr.—well remembered that he had a salary to receive, and only forget that he had a duty to perform".—Gibbon : *Autobiography*.

III.—UNIVERSITY EDUCATION—A HANDICAP TO SUCCESS IN BUSINESS.

Mr. Gilbert Brandon in a recent article reproduced below and entitled : "University men in business—how they fare in England" expresses his decided opinion that a University degree is rather a disqualification and a handicap in the way of success in life, as far as trade and business are concerned.

"When one considers the great captains of industry, one has to confess that most of them have not been University men, but mostly men who have risen from the ranks by sheer hard work, coupled with a peculiar sense, which, for want of a better term, we can call, the Money-Making Sense.

Employment of Public School Boys.

"One gentleman advocates strongly the employment of Public School boys. My experience has been that the average English Public School boy does not make an efficient business-

man. The prevailing idea of the English Public School is that it is a place for breeding gentlemen and the whole curriculum is based on these lines, with special attention to sport. I have watched many Public School boys in business and they appear to me to be more interested in sport than in work. Their eyes are always on the clock waiting for the hour when they can get away for golf or tennis.

"One finds that the average Public School boy objects to 'touting for orders', as he himself calls it. It is beneath his dignity and he really feels that his sphere in business is to sit at a desk with a row of bells with which he can ring for his subordinates, give orders and, of course, sign letters with a flourishing signature.

Oxford Wanting.

"I have studied many products of the Classics and they all seem to be lacking initiative and originality. They have what one might call the 'typically Classical mind'. When an acute situation arises they can quote very aptly what Socrates has said, but they show an appalling lack of power to carry out the said gentleman's advice or embark on a scheme of their own."

Mr. Andrew Carnegie, in his *Empire of Business* writes: "The absence of the college graduates in the list [of the industrial magnates] should be deeply weighed. I have inquired and searched everywhere in all quarters, but find small trace of him as the leader in affairs, although not seldom occupying positions of trust in financial institutions. Nor is this surprising. The prize-takers have too many years the start of the graduate; they have entered for the race invariably in their teens—in the most valuable of all the years of learning, from fourteen to twenty; while the college student has been learning a little about the barbarous and petty squabbles of a far distant past, or trying to master languages which are dead, such knowledge as seems adapted for life upon another planet than this, as far as business affairs are concerned; the future

captain of industry is hotly engaged in the school of experience, obtaining the very knowledge required for his future triumphs.”¹²

“In the education of a businessman”, says an American writer, “it must never be forgotten that his future life will be a life of action and not of study. Great care must therefore be taken that the health be no impaired in struggles for useless honours, that the feelings be not suffered to grow over-sensitive in useless contemplation.”

If I were young again !

Opportunities for Youngsters.

Sir Thomas Lipton, businessman, millionaire, sportsman, rose from poverty and obscurity. In an interview “Who would succeed” he presents his attitude towards life in his characteristically virile manner.

“Over sixty years ago, I worked in a warehouse shop in Glasgow for half-a-crown a week. At that time, I believed that the dominant feature of my character was my conceit. And the passing of the years has demonstrated to me over and over again that a man can have no better asset than a supreme self-confidence.

“In those, early days, when I was toiling six days a week for less than six pence a day, I promised my mother that she should have a carriage-and-pair before very long. It was no empty promise—many years before my dear mother died she could have had a dozen carriages.

¹² Cf. The late Mr. B. N. Basu while a member of the India Council requested a colleague of his, connected with a Banking House, to get a young Bengali apprenticed to his bank. Learning that the young man was over 22 years and was a graduate, he shook his head and said “My young friend, you have wasted the most precious period of your life, and your case, I am afraid, is hopeless. We take in office-boys of fourteen years of age, who have passed through a grammar school. They do all the drudgery of sweeping the rooms; dusting the office, of running errands, and in the intervals pick up knowledge in accountancy, book-keeping etc., and in this way, they in time become full-fledged experts ready to take up responsible positions”.

My mother inspired me :

"If I were young again! If I could roll back the years and start over again—why, I should just set out to live my life as I have it.

"I should, however, be sure that I possessed two invaluable qualities—a great devotion and respect for my mother, and confidence in my own ability. These are the qualities for which I look in the youngman who wants to get on. "In the first place, a man's mother can be his inspiration. To-day, I know that I owe everything to the woman who gave me the urge to succeed, who was behind my every effort—my every undertaking.¹³

"And in the second place, of what use is all the cleverness in the world if you have not the courage of your convictions, the courage to rely entirely upon yourself?

"I see no need for the public school and university education for the youngster who is going into industry. They equip him with learning that is of little practical value, and they take up valuable years—time that should be spent in earning instead of spending.

"Why should a youngman stay at school until twenty-one or two? By that time, he might have worked his way up into a position where he can command respect and a salary. As it is, the average university product is valueless in business, and has to begin like some glorified office boy.

¹³ Similar tribute has been paid by Carnegie to his mother.

English or European parents of humble origin and circumstances are often persons of fair degree of education and intelligence. The parents of Robert Burns, Andrew Carnegie, Mussolini and Lloyd George may be cited as instances.

Cf. "This is where the children of honest poverty have the most precious of all advantages over those of wealth. The mother, nurse, cook, governess, teacher, saint, all in one; the father, exemplar, guide, counsellor, and friend. Thus were my brother and I brought up. What has the child of a millionaire or nobleman that counts compared to such a heritage?"—Andrew Carnegie: *Autobiography*, p. 31.

"If I could begin all over again I should want no better education than the child of any working man received. I should for ever be straining at the leash, anxious to get out into the world and prove my mettle.

"I should go into trade, as I did sixty years ago, I should set out once more, to feed the country, for there is never lessening in the public demand for food. My business would not be at the mercy of any passing whim or fancy—I should deal in something that must ever be popular.

"And having begun, I should keep before me certain fixed ideals. I should determine never to lose a customer, but forever be making new ones. I should set out to "serve", so that no one would ever be dissatisfied. I should make it my boast that I gave the utmost for the least, that my trading set a fine example. I should again try to make each customer my friend, and let him feel that he commanded my entire personal attention.

Young men in Blinkers.

"In short, I should apply all those proved and trusty rules of my life experience. And over them all would be the influence of my mother, urging me on to bigger things, guiding me to better things.

"It would be a great adventure. To-day the fight for success is so much stronger, so much more exhilarating.

"The man who sets out as a lone fighter finds himself immediately up against big interests, concerns that would shoulder him out.

"To-day, however, he has many an opportunity to prove himself. The obstacles mean little to the youngster who would succeed".—*The Pearson's Weekly*.

Lord Cable¹⁴ and Lord Inchcape (as Mr. Mackay) started

¹⁴ The career of the late Lord Cable (of Bird and Company) affords another illustration of the well established fact that grit and ability are more than a match for any combination of adverse circumstances. It

from the lowest rung of the ladder. The former was an apprentice at only one hundred rupees per month, which, for an Englishman, must be regarded as ridiculously low.

"It is well that youngmen should begin at the beginning and occupy the most subordinate positions. Many of the leading businessmen of Pittsburgh had a serious responsibility thrust upon them at the very threshold of their career. They were introduced to the broom and spent the first hours of their business lives sweeping out the office. I notice we have janitors and janitresses now in offices, and our youngmen unfortunately miss that salutary branch of a business education. But if by chance the professional sweeper is absent any morning the boy who has the genius of the future partner in him will not hesitate to try his hand at the broom. * * * I was one of those sweepers myself".—Andrew Carnegie: *The Empire of Business*, p. 3.

"About forty-five years ago a fresh-faced, stocky Lancashire boy stood behind the counter of a small grocer's shop in Bolton. There was nothing about him to attract special notice except his eyes. They were of a brilliant, gleaming, arresting blue. No one could be quite ordinary who has such eyes. No artist could have caught all their various lights. That boy was one day to be the Viscount Leverhulme. I had this description twenty years ago from a very old Bolton man who knew William Lever and his father well. The boy is now a merchant prince, and one of the richest and most adventurous men in the British Empire.

"I look back more than fifty years. The young Lever's short period of education was soon to be exchanged for a busy life".—Lord Birkenhead: *Contemporary Personalities*, p. 277.

is the story of a poor Calcutta boy, although he was born in England; he came to India at a very early age, and received in Calcutta all the schooling, he ever had, who made his way to the front in the teeth of a thousand obstacles until he came to preside over the Bengal Chamber of Commerce, amassed a large fortune."—*Statesman*, March 31, 1927.—Lord Cable began his career at an early age on Rs. 100/- a month.

The two great Masters of Iron and Steel are Henry Bessemer and Andrew Carnegie. Bessemer, who revolutionised the process of steel-making which goes by his name, "knew nothing of metallurgy but that did not daunt him. He read everything that he could find on the subject". Andrew Carnegie, the multimillionaire and philanthropist, who began his career as a telegraph message boy, repeats almost the same story. He was, in one word, self-taught. Carnegie was neither an inventor nor a master of science. But few men have been more successful in adapting a great invention to the needs of his time than was Andrew Carnegie in seizing upon the Bessemer Process and using it for the expansion of American and world industry. It will thus be seen that it is not so much the possession of expert technical knowledge, but organising capacity, resourcefulness and initiative which are essentials in the making of a businessman or a captain of industry. As Dr. Hankin rightly observes :

"To the businessman the expert usually appears as an unpractical crank. Common sense, according to the businessman, is the sense by which money is made and it is a sense of which he finds no trace in the expert.

"I thought he was only a scientist, said an aggrieved businessman, when describing to me how an expert, by using his knowledge, had once got the better of him in some commercial matter".

"The late Mr. Pierpont Morgan, the American banker, once said, 'I can hire any expert for 250 dollars and make 250 thousand dollars with the information he gives me, but he can't hire me to do it for him'. This dictum seems to sum up accurately the limitations in business capacity of the average expert". Yet another striking example.

Mr. Bata's Career.

"Reputed to have made £10,000,000 in ten years, Mr. Thomas Bata, of Zlin, Moravia, the world's biggest manufac-

turer of boots and shoes has arrived by air in Calcutta during an Eastern tour.

Mr. Bata's rise to commercial eminence forms a spectacular romance of modern business. Son of a poor village cobbler he peddled, during his boyhood, boots and shoes from door to door, and now at the age of 55 he owns the world's biggest footwear factory turning out more than 160,000 pairs of boots and shoes a day and employing 17,000 hands."—*Daily Papers*, January 8, 1932.

In India also the few who have succeeded in founding big industries owe little or nothing to scientific or collegiate education. The late J. N. Tata, with whose name the Tata Iron Works and the Bombay Hydro-Electric installation will be inseparably connected, had some sort of liberal education, it is true, as he studied for two years at the Eliphinstone College, Bombay ; but he had never picked up even an elementary knowledge of Chemistry, Electricity or Metallurgy. Sir Sarupchand Hukumchand of Hukumchand Electric Steel Co. does not even claim that much of literary distinction. He is, however, eminently gifted with shrewd business instincts which have raised him to the position of a great Indian industrialist. Bengal can boast only of one eminently successful businessman, namely, Sir Rajendra Nath Mukherjee. I am never tired of repeating from many a platform that it would have been an evil day for Bengal, if Rajendra Nath had come successfully out of the Engineering College. Had he been a degree holder (B.E.) he would have been a failure in life.¹⁵

Confining myself to Bengal I find that "Biswanath Matilal, lately the Dewan of the Salt Golas, began life on eight

¹⁵ Cf. "The great attraction is the comparative certainty of subsequent official employment. Right out of ten students of the Engineering Department find employment under Government, and only one out of ten finds private employment. Mr. Heaton, the Principal, has remarked that this discloses in a startling manner the state of arrested industrial development in Bengal."—T. G. Cunning : *Technical and Industrial Instruction in Bengal*, 1888-1908, part I, p. 12.

rupees a month, and is generally understood to have amassed twelve or fifteen lakhs of rupees before he was required to relinquish his office. The father of Babu Ashutosh Deb, the founder of a wealthy family, served a native master at five rupees a month, before he became a clerk in the late firm of Fairlie Ferguson & Co. in whose employ, and also in that of American merchants—who named one of their ships after him, *Ramdulal Deb*, he accumulated a colossal fortune. The present Dictator in the money-market, the Rothschild of Calcutta, Matilal Sil [nearly a century ago] began his career with the humble salary of ten rupees a month.”—Vide *The Indian Mirror*, Aug. 14, 1910.

The late Syamcharan Ballav, who was one of the biggest jute-balers of his day, started from a very humble beginning. He was not “educated” in the ordinarily accepted sense and yet he had business capacity and acumen of the highest order.

Again, Mr. Ghanasyam Das Birla, has little or no University education ; had he had to go through the heavy drill of passing examinations and the nervous strain involved therein he would have become “fuddled” and lost all initiative. His views on trade, industry and currency problems command attention.

Mr. S. C. Banerji of the Tata Construction Works, Bombay, began his career as a lower grade clerk in the Assam Bengal Railway. Though not even a matriculate, he has shown wonderful talents and initiative. His firm undertakes big contracts not only of ordinary buildings but also of railroad making ; whereas those who have been regularly trained as professional engineers only hanker after jobs.

Mr. Nalini Ranjan Sarkar is another successful man of business. He is, I believe, only a matriculate. He has of late been much in evidence in connection with varied economic problems and his speeches and monographs are illuminating.

By a curious coincidence almost at the moment I was writing these lines, my eyes accidentally caught the telegram conveying a notable pronouncement by Mr. Morris who has been called the “Ford of England”. “For business, a

University training is an absolute waste of time. Though there are exceptions, I never found a University training any use to my organisation. The University won't confer the qualities essential to Commerce, but obliterates them if originally present. It does not give an understanding of the workers' psychology which is essential to carrying on large scale business. Under-graduates absorb the idea that life is an easy thing, and pay too great attention to sport and pleasure''.

My intimate connection with several industries in Bengal for the last forty years has given me a rude shock and sad experience in this respect, as far as University products are concerned.

If one took a census of the greatest of world's men and women, I fear he would be surprised to discover that the majority of them owe very little to Universities or indeed to any educational system.

It should be noted that men like Andrew Carnegie, Henry Ford, Thomas Edison, Lord Cable, Ramsay MacDonald, Thomas Lipton &c., though not college-bred, have not been lacking in culture. In the midst of their pre-occupations in earning their bread and laying the foundations of brilliant future careers, they found ample time by means of self-tuition to make up their deficiency in education.

I have often cited a list of men who have earned fame as scientists, businessmen and statesmen, but who began their career as common labourers, or have risen from the ranks. Such men owe every thing to their own unaided exertions. Take again a few more instances of men who have shown a rare combination of successful business instincts with reputation as politicians and men of science. Goschen and Lubbock (Lord Avebury) were bankers. The former was a statesman, and the latter a politician and also an eminent man of science. It is, however, unusual to come across such a harmonious blending of qualifications in one and the same person, nor is it necessary for the welfare of the commonwealth. Modern society is based upon division of labour. I have always held

that the economic misfortune of Bengal is mainly due to the fact that *every* youngman (as also his guardian) thinks that unless he had an academic hall-mark he would be a failure or a ruined man.¹⁶ If only the most promising and 'scholarly' son were reserved for a university career, and the remaining sons after going through a secondary course of education through the medium of vernacular were early apprenticed to a business or mercantile career the economic ruin of Bengal could have been averted.

"The State furnishes the schooling only to those who deserve it because of their merits, and leaves to other initiatives students who are not entitled to a place in the State's Schools.

"This puts on the scrap-heap the democratic concept which considered a State school as an institution for everyone—a basket into which treasure and waste was piled together. The middle class had considered the school at its service and therefore did not respect it. The demand was only for the greatest indulgence possible, to reach as quickly as they could their merely utilitarian purposes such as a degree or a perfunctory

¹⁶ The Principal of the Sa-Adat College in his own College Magazine writes under the heading :

"Otherwise my life is ruined"

"Some students secure inadequate marks in the Examination. Natural. They are detained. Natural again. They feel dejected. * * One by one they gravely walk in and solemnly submit : "Send me up, sir, please; otherwise my life is ruined" "Ruined!" "Oh yes, sir, ruined, lost, doomed forever and forever" he reiterates once, twice, thrice * * as many times as one may be pleased to lend him his ears. He can scarcely walk out when another of his class steps in and occupies his place. And then another and another and another * * all in the same solemn gait, with the same solemn words expressed in the same solemn voice with the only possible difference of the addition of a series of sighs, of groans or of tears. * * * Pass the Examination if you please, and work honestly steadily and strenuously for it so long as you are a student; win the brightest laurels of academic distinction if you can; but never for a moment forget that university education is only one among many and multifarious modes of the mere preparation for the actual battle of life lying still ahead."

passing to promotions." Mussolini.—*My Autobiography* p. 261.

IV.—MANUAL WORK HELD IN CONTEMPT—A GREAT NATIONAL DANGER.

Sir Edward Clarke in a recent speech said "Look at King's College, the University Classes in London, and all over the country! There are crowds of boys working hard putting in extra hours at study after their ordinary day's work." It is from these materials that the labour Ministry has been recruited and there is no reason to lose faith in the British boy who is as ambitious now as ever. In fact, it is reading with a purpose, that matters.

Those who read with a purpose will always score over those who read in schools or colleges simply because their parents or guardians compel them to do so. They have no real vocation or calling as pointed out elsewhere.

Effect of outside work on School success.

The most successful boys in school are those who are compelled to work to support themselves. The mere act of work does not appear to influence success, whereas the motive does so. These results appear from a study reported in *The Vocational Guidance Magazine* (Cambridge: Mass) by Francis T. Mc. Cabe of Harvard University. It was conducted at the Rindge Technical School in Cambridge, Massachusetts, having an enrolment of one thousand boys from thirteen to twenty years. We read:

"The study was conducted with a group of 758 boys, without previous knowledge of the boys' characteristics or capacities. The only selection made was an attempt to obtain by sampling a true cross-section of the entire student body. Each boy was asked to answer questions concerning his employment after school hours. From the data accumulated, the workers, those who work after school for pay, and the non-

workers, those who do not work after school, were separated into two main groups.

"The distribution of the two worker groups according to school marks seems to indicate that those who are compelled to work, take the school work more seriously and try harder.

* * * *

"Of the two groups of workers, those obliged to work show greater success in average school marks."

"Those obliged to work are more successful in average school marks than either the non-workers or the workers for extra money."

"The student who works his way through college is a familiar figure in American University life. A survey made recently by the Federal Office of Education covering 48 land-grant colleges—public institutions supported by State and Federal grants, and teaching primarily 'agriculture and the mechanic arts'—shows that nearly half the men and a quarter of the women students were 'gainfully employed'.

"Some 13,000 men and 3,000 women students in these colleges are entirely dependent on their own efforts during their stay at the college. The average under-graduate not holding a regular fulltime job, earns £30 to £70 a term and from £40 to £50 during the summer vacation."

Krarup-Nielsen referring to a newspaper correspondent in China incidentally observes :

"He (Tribune) like many other prominent American journalists, had had a varied career before he took his degree at the university and became a newspaper man—(had) reminiscences of the time when he worked on the railway lines as a labourer".—*The Dragon Awakes* : p. 77.

It by no means follows that every college-student in America is of the stern stuff described above. Years ago, Emerson drew a contrast between a city-doll, representing our average college-educated milk-sop and the self-made man of tough fibre ; says the great philosopher :—

"If our youngmen miscarry in their first enterprises they lose all

heart. If the young merchant fails, men say he is *ruined*. If the finest genius studies at one of our colleges and is not installed in an office within one year afterwards in the cities or suburbs of Boston or New York, it seems to his friends and to himself that he is right in being disheartened and in complaining the rest of his life. A sturdy lad from New Hampshire or Vermont, who in turn tries all the professions, who *teams it, farms it, peddles*, keeps a school, preaches, edits a newspaper, goes to Congress, buys a township, and so forth, in successive years, and always like a cat falls on his feet, is worth a hundred of these city dolls. He walks abreast with his days and feels no shame in not 'studying a profession', for he does not postpone his life, but lives already. He has not one chance, but a hundred chances".

Mr. C. J. Smith, who has for 40 years handled big jobs, is now (Dec. 1931) just on the point of retiring from the vice-presidency of the Canadian National Railways, at the age of 69. His weighty opinion may be quoted here :

"I think our Canadian idea of letting a boy work during his long summer vacation at whatever business he is going in for is a good one. He learns the practical side as well as the other. And there's nothing like learning young.

"When I was young there was no such thing as golf or billiards, and when I got into 'civilisation' about the age of 30 I couldn't play pool or golf properly."

I have given elsewhere numerous instances of men born in humble circumstances rising to the foremost position in several walks of life by dint of their own efforts. I shall conclude with brief accounts of the early life of four eminent leaders of men. Mr. Ramsay Macdonald thus speaks of his early days (speech on Nov. 26, 1931):—

"The past throws up its hands in simple bewilderment like the old Lossiemouth fisher-wife who greeted me a few years ago and said with homely, kindly, and simple expression, 'Well, Jimmie, wonders will never cease' "

"There is a great deal in going through life not by broad, smooth highways but by the unmade, rather muddy byways where you get human comedy and tragedy, where you meet ups and downs, sacrifices and kindnesses, without stage preparation, straight from the essential facts of life."

Mr. MacDonald then recounted two memories of his boyhood. "It is a very hard frosty morning" he said, "We have got up while it is still dark, and we have trudged a mile or two along the frost-bitten road. We get into a potato field where that extraordinary machine which used to go round knocking up the potatoes is in full swing. I am leaning on a basket into which the potatoes are being gathered, and find it difficult to keep the tears out of my eyes on account of my frost-bitten hands. Somebody who is overseer of us all comes and gives me a slap on my frost-bitten ear. The very thought of it makes me cringe with pain. Sitting sometimes on the Front Government Bench and allowing my thoughts to wander that incident comes back to me."

Mr. MacDonald also recalled from his youthful days an old character educated for the Church who for some reasons or other which the Recording Angel could explain came to wheel his barrow along the streets of Lossiemouth. "On a little board on the front of his barrow a volume of Tacitus. He read his Latin and Greek as he called out, 'Rags and bones, rags and bones,' A day never to be forgotten by me was when seeing me with a certain book in my hand, he said "Are you interested in these things?" I said, "I am" and he then said "Take that" and gave me a volume of Herodotus's history, and for months afterwards supplied me with the first library I ever had".

Another Labour Leader—the Rt. Hon. George Lansbury has recently (Dec. 1931) related the story of his early life and the hard struggles he had to go through; one or two extracts only are quoted below:

"The most eventful episode in my life, apart from those of a political and public character, took place in the years 1884-85 when, with my wife and three children all under four years of age, and a younger brother who was not eleven, I emigrated to Australia."

"At last I got myself started at stonebreaking ; it was a kind of blue metal granite which broke both my heart and my hands while hammering at it."

* * * *

"This new job was a parcel delivery man. I stuck at it for the rest of the time I was in Australia. My wage was fifty shillings a week and a house to live in at a place called Toowong, five miles out of Brisbane.

Through the tropic rain.

"My first night's work on this job was most exciting. The parcel cart was open and the rain came down as it does come down only in the tropics. I had about 200 parcels to deliver at different places, and I did not know a single one of the addresses to which I had to go.

"I started about 6 p.m. and delivered the last packet of sugar about 4 a.m. the next morning, having done the round which everybody had been sure that being a new chum, I should not be able to do. This achievement gave me a standing with the firm which I held for the six months I was with them.

"There is not much to tell about the work, except that the hours were from eight in the morning until twelve or one o'clock next morning on many days."

Again of Mussolini we read—

"He roamed the country . . . as a mason's labourer.
* * * * * "In Switzerland, where the winter is very severe, the building trade is brought to a standstill. Mussolini then turned the spare time to the best account by attending university classes and those of evening schools. In Scotland, I may say, the same thing happens as in Switzerland. Youngmen, engaged in building, are thrown out of work in winter owing to the cold, and, curiously enough, many do exactly what Mussolini did, they attend school and university classes. I remember some who were taking the arts course at Edinburgh University when I was there. But Mussolini went one better than my countrymen,

for he did not entirely abandon manual work. He would sometimes find employment as a shop-keeper's porter or message-boy, when he would carry parcels of goods to the merchant's customers on his broad shoulders, or in a basket slung over his arm, or, if the goods were heavy and the houses distant, in a hand barrow. The money he thus earned helped to pay his class fees and his board."—A. Robertson: *Mussolini*, pp. 49-50.

Of Masaryk, his biographer (Mr. Street) writes:—

"During these years (1868-69) perhaps the most impressionable in a boy's life, he (Masaryk) had to support himself, and for a part of the period his brother as well, in addition to pursuing his studies. His mother managed to send him a few florins from time to time, but that was all the assistance he could expect to receive. For the rest he had to depend upon his own resources.

"He lived at first in the house of a shoemaker in the Nova Ulice, together with half a dozen other students as poor as himself. For their lodging, laundry and breakfast the boys each paid two guildens, or about three shillings, per month. As may be imagined, conditions at the shoemakers' were not luxurious, but the boy and his companions contrived to enjoy themselves in their own way."—*Op. cit.*, p. 29.

I should not fail to mention another instance—Lord Reading came to Calcutta the first time as cabin boy, the second time as the Viceroy.

While in Europe and America dignity of labour is held high in estimation, the reverse is the case in India especially with boys and youngmen who have been to school not to speak of college. Mr. Abdul Karim, late Inspector of schools, thus gives vent to his agonised feelings:

"In the course of my tours, while visiting a school in the district of Backerganj, I found it would die for want of funds and pupils. I asked the leading people of the locality to meet me at my green-boat after the inspection was over.

While I was urging upon them the necessity of maintaining the school by contributing to its funds and by admitting their boys into it, I heard a man whispering that he would give 'Hari Loot' (A Hindu thanks-giving ceremony) on the day the school would be abolished. When the people were gone, I enquired of the local Inspector of Police, who came to see me why the residents of the place were disgusted with the school. What he said convinced me that the people had reason to be dissatisfied. The place was largely inhabited by petty shopkeepers, who required the assistance of their boys in selling goods and in keeping accounts. But no sooner were the boys admitted into the school than they gave themselves airs and looked down upon shopkeeping as unworthy of the people who could read and write. From what I learnt at this and subsequent inquiries, I have reason to think that the existence of a school in their neighbourhood has been a source of much trouble to many a peasant family. Even against his wish a peasant has to send his boy to the neighbouring school either through the persuasion of the Guru, or on account of the importunity of the boy who wants to join the other boys of the village at school. As soon as the boy enters the school he becomes a different creature. He changes his manners, habits, tastes and even his name. * * * * *

His parents not only lose his assistance in tending cattle and cultivating fields, but are also obliged to supply him with good clothes, an umbrella, besides books and writing materials at a cost far beyond their means. He becomes a burden upon his family and not infrequently a curse to society. For, he creates factions, fosters litigation and sometimes even teaches perjury and forgery".—(*Some Political, Economical and Educational Questions* pp. 5-6). Such a state of affairs will drive every lover of his country to despair. It is time that we recognised that institutions which breed contempt for manual work are not assets but the most dangerous enemies to national progress.

V.—DEFECTS IN OUR SECONDARY EDUCATION—COLOSSAL WASTE
OF ENERGY DUE TO A FOREIGN TONGUE BEING THE
MEDIUM OF INSTRUCTION.

The enormous waste of time in the education of a Bengali youth is simply staggering. Six or seven years of the most precious period of a boy's career are simply wasted in learning or picking up the intricacies of a foreign tongue through the medium of which he is made to acquire knowledge. Such a monstrous and perverse arrangement does not, I believe, obtain in any other country under the sun. Education should always be imparted through the mother-tongue of the learner—the language of his nursery. This is so self-evident that it scarcely needs any elaboration or justification. An English or Scotch lad pores intently over the contents of Dickens' *Child's History of England* or Scott's *Tales of a Grandfather* or *Robinson Crusoe* or *Gulliver's Travels* or *Alice in Wonderland*. He learns a good deal from his papa or mamma. He greedily devours accounts of travels, adventures, polar expeditions, of the climbing of the Kilimanjaro or the Andes or the Himalayas and does not wait to be told that none of these enter into his prescribed text books. Imagine for a moment what would happen if the English lad were compelled first of all to learn Persian or Chinese or say German or Russian and then had to read through the medium of such a tongue. When we speak of a man being well informed we do not usually consider the medium of language through which he has picked up his knowledge. We are blindly following a pernicious system, which more than anything retards the acquisition of knowledge.¹⁷

¹⁷ While sending this portion to the press I find in the "Report of thearticulation Regulations Committee" just out (June, 1932) that the University has practically adopted the suggestion that in the Matriculation stage, examination in all subjects other than English will be conducted through the medium of one or other of the major Vernaculars. As such my contention about the medium of instruction referred to in this chapter might be considered as a matter of historical importance only. But I find to my disappointment that the new

Plato, Hegel and Kant ; Confucious and Mencius, the Bible and the Koran ; the Ramayana and the Mahabharata are almost always read in translation. No one, except perhaps the scholarly linguist, would learn Greek, German, Chinese, Hebrew and Arabic, to have the pleasure of reading them in the original. Even an average educated Hindu reads the epics named above in the versions of Tulsidas, Kirtivasa and Kasiramdas. But here in India we have adopted the most unnatural system and have to pay a heavy penalty for it.

History, Geography, Geometry, Algebra, Arithmetical, Hygiene and the elementary principles of science and political economy can easily be taught through the medium of Bengali. English should be relegated to the position of a second language.

Those who want to be real scholars will study not only English but also German and French ; only English ought not to be looked upon as the medium of instruction. A man of education must, in the first place, be one well up in all-round information, and he can gather it best, and in the minimum of time, if he does so in a language he learned to lisp in.

As indicative of the huge waste of time and energy of our youngmen during the most precious and determining period of his life the following table may be quoted here ; it

regulations take away with one hand what they give with the other. The burden of mastering the intricacies of a foreign tongue will still hang heavy on our boys. In fact, so much importance is attached to English that three papers are allotted to it, while History and Geography—two important subjects—will have only one ; Mathematics one and the Major Vernacular languages only two papers. Thus History and Geography each will claim only *one-sixth* the attention bestowed upon English, which will tax all the energy and attention of our boys at the cost of other subjects. Moreover, he will be incapacitated in the economic fight where general knowledge and common sense are required and not a high proficiency in a particular language. As a matter of course the drawbacks under the existing regime will continue, I am afraid, in a still more aggravated form. The Report makes a surrender to "Imperial idea" as Mr. Monahan has it. (*Vide* poste p. 296).

gives the number of students, during the session 1930-31, preparing for the M.A. degree in the Calcutta University.

Subjects.	5th Year			6th Year	
	Class.			Class.	
English	119	...	112
Mathematics	36	...	29
Philosophy	36	...	26
History	55	...	44
Economics	116	...	92
Commerce	23	...	20
Ancient History	14	...	17
Anthropology	5	...	6
Exp. Psychology	4	...	3
Comp. Philosophy	1	...	0
Sanskrit	19	...	20
Pali	2	...	2
Arabic	4	...	1
Persian	8	...	3
Indian Vernaculars	7	...	18
TOTAL			449	...	393

That the students as also their guardians do not bestow a modicum of thought in selecting the subjects for the highest degree is evident from the fact that English literature has the largest attraction. One naturally expected that the case would just be the reverse, for to learn the intricacies of a foreign tongue, involves heavy strain and sacrifice of patience and time, which might otherwise have been more profitably utilised. The syllabus of study again takes one's breath away. The list of authors with their works is simply staggering and occupies five and half pages in the calendar. The entire field of English language and literature is covered from old English down to post-Victorian period as represented by H. G. Wells, Conrad, Bernard Shaw, Arnold Bennet and Galsworthy.

I fully admit that there should be Indian students who would make a life-long study of English literature, just as there are scholars in England, France and Germany who have devoted themselves to Sanskrit learning. I should welcome an Indian Schlegel or Taine. But why should there be as many as 230 candidates preparing for the M.A. degree in English? They are fed on pemmicanized and tabloid-form of knowledge. No wonder that the average Master of Arts in English excites as much ridicule as pity. No wonder Mr. M. West, Principal, Teachers' Training College, Dacca, in his evidence before the Agr. Comm. says "the English reading ability of an M.A. is equivalent to that of an English girl aged 15, of a B.A. to age 14, of a Matriculate to age 10".

Mr. West may have unconsciously indulged in a bit of exaggeration ; I am afraid his remarks are not very wide of the mark, if applied to any average graduate.

Macaulay is often found fault with because of his famous Minute of 1835 in which he gave his verdict in favour of western education and thus ended the controversy between the Anglicists and Orientalists.¹⁸ It is said that he forgot the claims of the vernacular. This does not appear to be a fair criticism, for he himself foresaw that in due course Indians imbibing western notions would themselves cultivate their mother tongue and write books and impart knowledge through its

¹⁸ The particular passage which is regarded now-a-days as objectionable is given here :

"The whole question seems to me to be which language is the best worth knowing? * * * I am quite ready to take the oriental learning at the valuation of the orientalists themselves. I have never found one among them who could deny that a single shelf of a good European Library was worth the whole native literature of India and Arabia. * * I think that the natives are desirous to be taught English, and are not desirous to be taught Sanskrit or Arabic. *Minute* by T. B. Macaulay, 2nd Feb., 1835.

Pandit I. C. Vidyasagar as Principal of the Sanskrit College might be expected to be partial towards the Hindu Sastras ; but he was more scathing in his denunciation of Vedantas than even Ram Mohan or Macaulay, *vide* his letter to the Council of Education (1853) in the

medium.¹⁹ His prophecy was literally fulfilled, as we find that within twenty years of his famous Minute and even earlier Krishna Mohan Banerjee, Iswar Chandra Vidyasagar, Akshay Kumar Datta, Rajendra Lal Mitra, and others began to produce works of merit in Bengali which were extensively read. It should not be forgotten that nearly twenty years before Macaulay's Minute, the leading Hindus had themselves founded a college at Calcutta (1816) by their "own voluntary contribu-

course of which he says, "For certain reasons, which it is needless to state here, we are obliged to continue the teaching of the Vedanta and Sankhya. That the Vedanta and Sankhya are false systems of philosophy is no more a matter of dispute". (For details consult Brajendranath Banerji's instructive article in the *Modern Review*, Oct., 1927, p. 405.

The fact is that Rammohan and Vidyasagar, erudite Sanskrit Scholars as they were, wanted to emancipate the minds from the thralldom of authority and tradition, as hitherto the theological bias had lain like an incubus upon the Hindu mind. What these great men had in view was that Western ideas should permeate our literature and not antiquated notions borrowed exclusively from Sanskrit and Persian. Ram Mohan knew well that if his countrymen were to be enlightened the vernacular must be the medium. Hence he not only conducted a periodical in Bengali—*Sambad Kaumudi* (1821) for the propagation of his views but began his crusade against *suttee* also in a Bengali pamphlet. Almost all the popular works of Vidyasagar are mere translations from the English originals and they are models of chaste Bengali. In fact both Ram Mohan and Pandit Vidyasagar are regarded as the fathers of Bengali prose.

¹⁹ The idea had been started of paying authors to write books in the languages of the country. On this Macaulay remarks :

"To hire four or five people to make a literature is a course which never answered and never will answer, in any part of the world. Languages grow. They cannot be built. We are now following the slow but sure course on which alone we can depend for a supply of good books in the vernacular languages of India. We are attempting to raise up a large class of enlightened natives. I hope that twenty years hence, there will be hundreds, nay thousands of natives familiar with the best models of composition, and well acquainted with western science. Among them some persons will be found who will have the inclination, and the ability to exhibit European knowledge in the vernacular dialects. This I believe to be the only way in which we can raise up a good vernacular literature in this country. Trevelyan : *Life and letters of Lord Macaulay*, vol. i, p. 411.

tions, for the instruction of their youth in English literature and Science." In 1822 again Ram Mohan Ray had sent a vigorous letter to Lord Amherst (*Vide*: ante Ch. XI) in which he earnestly pleaded for the teaching of Western Science and Literature and there are passages in it, which are almost interchangeable with those in Macaulay's Minute. Kasiprasad Ghosh, the first Bengali writer of English verse, whose poems attracted attention, had appeared in the field five years before Macaulay penned his Minute.

The fact is our forefathers themselves went mad over English education to the neglect of the vernacular. Thus we find that a public meeting was held on the 25th November, 1844, at the Hall of the Free Church Institution for the purpose of expressing gratitude to Lord Hardinge for his minute relative to the appointment of educated in preference to uneducated Indians in the Government offices. Here it is taken for granted that one could not be regarded as "educated" unless he mastered English first and then gathered knowledge through its medium. Hence an abnormal stimulus was given to learning English and an unnatural system adopted in our schools and colleges. This has led to the primary and upper primary schools, nay even middle English schools being relegated to neglect; Matriculation schools alone are popular and thrive, as they qualify pupils for the University.²⁰

In the early stages, *i.e.* in the thirties and forties of the last century, it may have been necessary to give undue prominence to acquiring a knowledge of English so that the

²⁰ Cf. "And the popular aversion to vernacular education remained just as strong as before. The report, 1852-5, notes the demand for English education which has arisen in every district, that those who through their unwillingness to make any local contribution, however small, towards the Hardinge (vernacular) Schools pay and pay willingly for English Education and found private institutions to impart it. "It must, however, be confessed that the hope of lucrative employment rather than any desire for education itself mainly induces parents to pay for their children's instruction. In Vernacular Schools no such powerful motive exists."—Michael West: *Education*, p. 153.

gates of Western learning may be flung open. But even then the mistake should not have been committed of compelling *every* boy to pick up his information through a foreign medium. The underlying motive all along has been the service-seeking mania. A parallel may be traced in the intellectual conditions of Czecho-Slovakia in the sixties. "Masaryk also cultivated a distinguished German style, and it was in this respect that his tutors found him in any way exemplary. That he should devote himself with such earnestness to the German language may seem to be a contradiction of his steadily developing Czech consciousness. But, in fact, it was not so. The Czech language had practically fallen into disuse as a literary tongue, although it was still employed colloquially and among the poorer and more illiterate classes. If he were ever to appeal to the educated world, it would be necessary for him to do so in the German tongue, which was current throughout Bohemia and Moravia. It could not be foreseen that this influence was later to be one of the most powerful factors in enabling the Czech people to follow the progress of modern thought in their own language". *President Masaryk*, p. 46.

Mr. West in his *Bilingualism* (with special reference to Bengal) discusses the subject at length from which I make the following extracts :

"Now there is an essential difference between a bilingual and unilingual country ; in the latter only the few children of more marked linguistic capacity, or of wealth and leisure, at their own option study a foreign language, whereas in the former (the bilingual country) the average child and even the child below the average is compelled by hard necessity to acquire a second language. It is only with some difficulty that the child with linguistic capacity acquires an efficient knowledge of a foreign tongue ; how much more liable to be unfruitful is the attempt of the merely average child and the child who is below the average? The clever child has time to spare ; and average child has not. Even if the average child succeeds in obtaining the necessary command over the second language,

his success is too often bought at a cost of a reduction of the time spent on other subjects which he is unable to afford. He has thus the choice, between Speech and Knowledge, —between linguistic and educational insufficiency. * * *

“Their need is not English to speak, not English to hear, nor to write, but English to read, in order that they may enter that vast repertory of knowledge which is contained in the richest of all languages.”

Mr. F. J. Monahan, who as Commissioner of two divisions in Bengal, had a thorough and intimate knowledge of Bengal and the Bengali in the course of his evidence before the Calcutta University Commission says :

“I think that some Englishmen who advocate the use of English as a medium of instruction in schools and colleges are influenced by natural enthusiasm for the Imperial idea. They value the English language as a bond of union in the Empire and dream of its becoming the common and universal language of India.

* * * “There are also many examples which show that to attain success in commerce or industry a very small amount of knowledge of English, or indeed of education, of any kind suffices. The millionaire Marwari merchant of Barabazar has not taken the trouble to learn English, and employs a Bengali B.A. on Rs. 40/- a month to conduct his English correspondence. *Though a good general education, including English, should be an advantage to an Indian in every walk of life, yet, if the main object were to make as many Indians as possible commercially and industrially efficient, probably the best plan would be to help them to acquire as quickly as possible at school some form of “pidgin” English, in addition to arithmetic and book-keeping, and apprentice them at an early age to a commercial or industrial business.* (The italics are mine).

“It seems to me that in a country like India, with its great variety of races, languages, civilisations, ideals, religions, and philosophies, it is a mistake to impose on the whole population one method of higher education through the medium of a foreign language and uniform sets of uniformity courses, at the same time making the University examinations the sole avenue to employment in the middle and higher ranks of the public services and in the professions. I think that a good deal of the discontent prevalent among Indians of the upper and middle classes is traceable to this. I would suggest that, on the one hand, University examinations should cease to qualify for posts under Government, sub-

ject, possibly, to certain exceptions in the case of technical departments, and that, on the other, the University should be organised on a more catholic principle, and should admit to affiliation colleges and other institutions of higher education teaching different courses, and using different languages as their media of instruction, only assuring itself that the standard of teaching is sufficiently high. For the great majority of students the most suitable medium of instruction would be their own mother tongue, or "vernacular"—to use the official expression—but, for some English would be a suitable medium of instruction."

I would conclude this chapter by repeating what I said at the Convocation address at Mysore in 1926.

"If we begin by critically examining our methods in India (not only in your University) the first outrage that we find we committed was to make a foreign language our vehicle of instruction. It is surprising that this principal reason for our intellectual sterility was not discovered till very recently, and it is still more surprising to find that some of our well-known educationists even to-day continue to regard the relegation of the English language to an inferior position as fraught with disastrous consequences. To avoid misconception I must here, once for all, make it clear that the study of English or other important foreign languages is by no means discouraged; they open up newer vistas of thought and ideal. A man of education must, in the first place, be one well up in all-round information, and he can gather it best and in the minimum of time if he does so in a language he learned to lisp in, while sucking his mother's breast—the language of his nursery. Arithmetic, History, Economics, Politics, Logic and Geography, in short the book of knowledge can readily be mastered in one's own vernacular. That should be the first stone in our educational edifice if we want to build well and high.

An educational authority on Bilingualism in Bengal has favoured me with his opinion reproduced here:—

LATE BEGINNING OF FOREIGN LANGUAGE.

"I believe that the reason why so much time is wasted on foreign-language-study in India is that the children begin to

study a foreign language much too early. There is a common idea that the younger the child, the better he learns the foreign language. This may be true under the age of eight ; a very young child may unconsciously pick up a foreign language better than an older person can acquire it by study. But there is a great danger that such bilingualism in early childhood may be detrimental to the mother-tongue. In any case, this argument has no application whatever to the case where the child does not hear the foreign language in his home, or to the case where he begins it as a school subject at the age of eight or nine. The best age to begin a foreign language is about twelve to fourteen, for by that time the child has mastered his mother-tongue, knows the principles of grammar, and has the mental development necessary for intelligent study. Moreover, by the time the children reach the age of fourteen, we know which of them need the foreign language and are capable of assimilating it."

"At present we teach English to vast numbers of children who will never really have a great need of English, and who are intellectually incapable of mastering a foreign language. The numbers are so large that we cannot provide efficient language teachers ; so the teaching is bad. Moreover the size of class makes an enormous difference in the efficiency of language teaching. A child learns to speak a language by speaking it. It follows that in a class of sixty children each child speaks for only one minute per hour of school time,—or rather *half a minute* because the teacher is talking half the time. It is not possible, in my opinion, to produce any effective results in the speaking of foreign language with a class exceeding twenty-five boys, and even then the results can be obtained only by very highly skilled teaching. Similarly boys learn to write by writing. Writing is useless without correction. Unless the classes are kept small and selected, the teacher is overwhelmed with the masses of written work which he cannot correct, and the inferior boys write so badly that a large proportion of the teacher's time is wasted in correcting the

exercises of boys who are really hopeless. I believe that the most urgently needed educational reform in this country is the institution of a middle school examination and the absolute restriction of any teaching of English speech and writing to children who have passed the middle school examination."

VI.—THE TRUE FUNCTIONS OF A UNIVERSITY.

It may be thought that I am out to preach a sermon against University education altogether. Nothing is further from my purpose. My object is to sound a note of warning against the feverish craze in our youngmen to secure a degree. *I only plead for a considerable elimination of candidates in the process of selection.* No one should choose a University career unless he feels that he has an instinctive call in that direction. A University should be a centre of scholarship, research and culture. Let those alone seek the portals of the academy who are prepared to dedicate their lives to the enlargement of the bounds of knowledge.

Laski observes in *The Dangers of Obedience*:

"I have no use for the lecture that is a mere substitute for books (p. 105).

"The University has failed when its students are not aroused to passionate discussions among themselves, or when the work they do fails to awaken them to the study of great books (p. 107).

"The student who is satisfied with pemmicanized knowledge has gone through the University with his mind closed; he has eaten facts, but not digested them" (p. 108).

"The great teacher is one of the rarest of human beings".

"His lectures, his criticism, his discussion must never become a system of formulas that he regurgitates year by year to students whom the academic tradition has already taught what they are to expect" (p. 114).

It is generally a grievance against the University, often ventilated in the newspapers that our young hopefuls, when they come out of the portals of their academy, are unable to

earn their bread. This attitude has become common in our country because the degree often supplemented by a competitive examination has hitherto been the passport to a professional career or a snug berth in the huge hierarchy of the bureaucratic system set up by the Government ; but as has been pointed out above there is at present ten times, nay, perhaps, a hundred times (I had almost said a thousand times) greater supply than demand. The discontent has begun to be vented upon the University system of education now in vogue. It is clean forgotten that the function of the University is to impart a liberal education which would extend the angle of vision and free the mind from narrow and contracted outlook so characteristic of the average businessman. As Laski says—

“The business of a University is not the transformation of undergraduates into fountains of information. It does not seek to make men expert in their life’s career. Its business is the very different task of teaching the student how facts are converted into truth”, * * * * * “It seeks only to confer habits of mind which enable the student to weigh the significance of facts from the angle of philosophy. A mind receptive to novelty, capable of wisdom, inclined to moderation—these are the excellencies at which it aims. If the student enters upon his life-work with qualities of this kind, the University will not have lived for him in vain.” *op. cit.* pp. 91-92.

Cardinal Newman very properly observes :

“Knowledge then is the indispensable condition of expansion of mind, and the instrument of attaining to it.” *Idea of a University*, p. 129.

“It is, I believe, as a matter of history, the business of a University to make this intellectual culture its direct scope, or to employ itself in the education of the intellect.” *ibid.* p. 125.

“Knowledge is capable of being its own end. Such is the

constitution of the human mind, that any kind of knowledge, if it be really such, is its own reward.' *ibid.* p. 103.

The testimony of some of the greatest of men in Science or in practical business will reveal the urgent need for reform in our Universities. "I would not give a penny for the ordinary College graduate", says Edison, "An educated man is not one whose memory is trained to carry a few dates in history—he is one who can accomplish things. A man who cannot think is not an educated man however many College degrees he may have acquired." (Henry Ford).

Laski has recently (1930) reiterated the same views almost in identical language, e.g. "They are factory methods of instruction, useful if we seek to turn out mental Robots by the thousand, dangerous if our ambition is the training of thinking minds"—*op. cit.*, 105.

About this mass production of graduates, Mussolini expresses the following opinion:—

"We lacked intelligent systems of selection and vocational and educational valuation of individuals. A mill ground on and on turning out stock patterns of human beings who mostly ended by taking tasks in bureaucracy. They lowered the function of public service by dead and not living personnel. Universities created some other puppets in the so-called "free arts" as law and medicine.

It was time that the delicate machinery of such consequence in the spiritual life of the Nation should be renewed by a precise, definite organic form." *Autobiography* p. 259.

"The true University of these days is a Collection of Books." says Carlyle in *The Hero as Man of Letters*.

Mr. H. G. Wells adopting as his text the above dictum²¹ further amplifies it and pertinently observes:

²¹ Carlyle has gone so far as almost to vote the abolition of the University. Says the philosopher:

"Universities are notable, respectable products of the modern ages. Their existence too is modified, to the very basis of it, by the existence

"Now the frank recognition of the book and not the lecture as the substantial basis of instruction opens up a large and interesting range of possibilities. It releases the process of learning from its old servitude to place and to time. It is no longer necessary for the student to go to a particular room, at a particular hour to hear the golden words drop from the lips of a particular teacher. The youngman who reads at 11 O'clock in the morning in luxurious rooms in Trinity College, Cambridge, will have no very marked advantage over another youngman, employed during the day, who reads at 11 O'clock at night in a bed-sitting-room in Glasgow."

The Universities however will serve a real need of the community if they are guided by proper ideals ; and these ideals will become immediately clear from Street's *President Masaryk* about his "outlook upon education, derived from his own experience, and from later observation of the pupils who attended his classes. His chief criticisms of the educational system of Bohemia were that it failed to cultivate independence of character, self-knowledge, and a sense of honour, and that it aimed rather at "cramming" for examinations than at laying a foundation upon which a specialised superstructure could be built later. His own case was somewhat exceptional ; removed from home influences, and forced by circumstances to support himself while he learned, he naturally acquired independence of thought. But for others, more favourably placed materially than himself, their school years were at best an imperfect period in the moulding of their characters. Their tendency was to inspire in them no higher ambition than that of acquiring

of Books. Universities arose while there were yet no Books procurable ; while a man, for a single Book, had to give an estate of land. That, in those circumstances when a man had some knowledge to communicate, he should do it by gathering the learners round him, face to face, was a necessity for him. If you wanted to know what Abelard knew, you must go and listen to Abelard. Thousands, as many as thirty thousand, went to hear Abelard and that metaphysical theology of his."

material security, a sort of exaggerated "safety first", which found its highest realization in a Government position, with an assured pension. In this Masaryk saw the fear of death, the fear of a life of enterprise, the negation of every sentiment that produces leaders among men.

"He bases much of his criticism on the fact that one forgets really everything that one learns at school. The object of education, therefore, in its earlier stages at any rate, should be not so much to impart a series of facts as to awaken an interest which shall induce the scholar to ascertain these facts for himself. The first essential in awakening such an interest is that the teacher should himself be keen on his subject. Masaryk's own enthusiasm for the subjects which he was called upon to teach is probably responsible for his success, first with the boys to whom as a young man he acted as tutor, and later, in Prague, with the students who attended his classes from all quarters of the Slav world." * * * *

"His aim was to produce, not a constant stream of graduates, all moulded alike and professing the same stereotyped ideas, but a race of individuals trained to think for themselves. The aim of education, in his opinion, was to lay the foundations which should enable the individual, when confronted with any particular problem, to find the solution for himself. From his earliest years the pupil should be taught, not a bewildering assembly of facts, but the habits of accuracy, method and concentration." *op. cit.* pp. 81-83.

Herbert Spencer rightly observes: "Even as appliances to intellectual culture books are greatly overestimated. Instead of secondhand knowledge being regarded as of less value than firsthand knowledge, and as a knowledge to be sought only where firsthand knowledge cannot be had, it is actually regarded as of greater value. Something gathered from printed pages is supposed to enter into a course of education ; but if gathered by observation of Life and Nature, is supposed not thus to enter. *Reading is seeing by proxy*—is learning indirectly through another man's faculties instead of directly through one's own

faculties, and such is the prevailing bias that the indirect learning is thought preferable to the direct learning, and usurps the name of cultivation."

"Books are good enough in their way", says Stevenson, "but they are a mighty bloodless substitute for life."

Throughout my twenty-seven years' career at the Presidency College, I made it a point to lecture mainly to the junior classes. Boys coming fresh from High Schools are very teachable as they represent so much clay in the potter's hand to be moulded into the desirable shape. My lectures were never based upon any particular text-books. If any pupil at the beginning of the session would ask me to recommend any particular text book, my invariable reply was: "Make a bonfire of it if you have already invested your good money in any, but simply follow my lectures." Of course, in the case of suitable text-books out of the ordinary run, which did not encourage cramming I would gladly make an allowance, but recommend them for consultation only.

A good portion of the session—July, August and September—was taken up in finishing the three elements, namely oxygen, hydrogen and nitrogen, as also their compounds. I took good care to give my pupils an historical insight by weaving into my lectures—stories of the discovery of oxygen—the contributions of Priestley, Lavoisier, and Scheele and their rival claims. Under the oxides of nitrogen, again, the atomic theory, specially the law of definite and multiple proportions, was given prominence and Dalton was brought on the stage so to speak and a sort of living personal contact was sought to be established between "the makers of modern Chemistry" and my pupils.²² In short, I took good care to have the groundwork on a solid foundation. To my dismay I often found that in several other affiliated Colleges, they had in the meantime not only finished a considerable portion of the prescribed course but begun to

²² Vide my *Makers of Modern Chemistry* based upon a series of lectures delivered at the Dacca and Calcutta Universities.

revise it. This brings me to the mode of teaching at present followed both in the Science and the Art courses. Not only students, but a large majority of teachers as well, have become the slaves of routine methods, as they follow closely the text books. The present system of teaching has become vitiated from top to bottom. If any teacher tries to throw additional light on the subject by going beyond the range of the prescribed text-books, the pupils grow fidgety and impatient. "Oh Sir", they say by way of protest, "you are dealing in extraneous matters ; why should we stuff our memory with these? They are not required for passing our examination."

I should have been glad, indeed, if even the text-books were done justice to. Of late years, matters have drifted from bad to worse ; even text-books have begun to be discarded and any number of short cuts and royal roads to learning has been substituted for them.²³

In my student days, as I have elsewhere said, text books seldom satisfied my curiosity or craving ; they were of use in that they served as reference books, and I took good care to hunt up the original papers in English, French and German periodicals, and go right through their contents. I have already said that I learnt Latin and French unaided. I got through some plays of Shakespeare along with other English classics to satisfy my hunger for study (*ante*. pp. 33-36). This naturally explains why I could not secure high places in the Calcutta University examinations and was regarded more or less as mediocre. To my agreeable surprise I find that a

²³ In practice it is found that the kind of literature most in favour consists of "aids", "digests", "compendiums", "One-day-preparation series", "made-easy series" and so forth. Students swallow these concentrated tabloids on the eve of the examination.

Report on Education in India in 1928-29 by the Educational Commissioner, quoted in *Nature* : Aug. 1, 1931, says :

"Of the University of Bombay, it is recorded that the average student does not bother to read his texts but is content to learn by heart second-hand opinions on them, gleaned from cheap bazar cram-books." This is true of 99 per cent of our examinees.

parallelism can be drawn between my school career and that of President Masaryk. I have always been inclined to look upon "greats" and "double firsts" as forced hot-house products.

"* * * In Vienna, as in Brno, he did not earn the wholehearted approval of his tutors, who regarded him only as a mediocre student, in no way up to the standard of his more brilliant fellows. The reason for this lack of appreciation was that Masaryk refused to be bound by the official curriculum, or to specialize upon any one branch of knowledge. In the atmosphere of Vienna the omnivorous thirst for knowledge which he had already displayed at Brno grew to a disproportionate extent. * * *

"His favourite reading at this period was to be found in the classics. The great works of the Greek and Latin authors he read in the original and in unabridged versions. The school texts failed to satisfy him; if a subject was worth studying at all, it was worth studying thoroughly.

* * * "He knew instinctively, even at the age of nineteen, that the ordinary learning of the schools would lead him nowhere. He felt, as most intelligent youths of his age are bound to do, that it lay within his powers to make a future for himself. What that future might be, he had as yet no idea. But he knew that if he were to attain to it hard work was a necessity, not only in acquiring the dry and often unfertile facts of the lecture-room, but in studying the great field of human knowledge which lay beyond them. To Masaryk it became necessary to understand the forces which move the world and the peoples inhabiting it." *op. cit.* pp. 40-46.

The mischief done by prescribing text-books has been referred to by the thoughtful writer quoted below who says: "The curse of University instruction is invariably the text-book." Again, "It is, moreover, fundamental that, in any subject, the student should learn its essentials at firsthand. If he is studying Shakespeare, he must read Shakespeare; it is not enough to know what Bradley or Kittredge has learned from reading him. If he is studying the history of political ideas, he must wrestle at firsthand with Plato and Aristotle, Locke and Hobbes and Rousseau; and if, knowing them, he cannot recite the endless catalogue of names a text-book will recite, he will not, as a rule, be much the worse off. If he is doing economics, it is fundamental to make him read Adam Smith and Ricardo; to wrestle with them will give his mind an

infinitely better texture than the ability to reproduce the leaded definitions even of a first-rate professorial manual." Laski : *op. cit.* p. 97.

In the course of my Convocation address (University of Mysore, 1926) I observed :

"Every one will admit that with an improved and broadened form of secondary education, the functions of the Universities will be stripped of many of their unnecessary appendages, making thus for real progress. The mechanical portion of training which ought really to be finished in the school stage, but which unfortunately is prolonged to the University Grade, will then greatly disappear and make these Universities real centres of learning and culture. I fear a good deal of explanation is necessary at this point, mainly because the present University system is as yet so full of routine details that its function is not very far removed from that of a Secondary School. Even in the post-graduate stage there are some who would insist on regular class exercises. I do not for a moment suggest that in the Universities under the cloak of freedom of choice of study, any indolence should be encouraged. The habit of industry in addition to intellectual capacity, should form the primary condition of continuance in the University. All that is implied is that the numerous compulsory class lectures and exercises that form to-day the basis of training in the Universities should be abolished if the intellectual capacity of University students is to develop. No doubt the lecture system gives an appearance of work, but if the student is himself willing to utilise his time, he would in most cases find that he gets through more work by absenting himself from these compulsory lectures. The greatest disadvantage of the compulsory lecture system arises from the fact that those that attend can only under exceptional cases ask questions to clear their difficulties, and as is only natural, the teacher only presents his own viewpoint. To remedy these evils, the tutorial system is being introduced in some Universities ; but although this latter partially supplements the incompleteness of the former method,

its general effect, so far as I am aware, is more of the nature of coaching without intellectual effect. Just consider the opposite system where the student is only given the names of some books and some questions on the problems dealt with therein ; he reads them, digests them and finds out his own answers to the questions by a process of thinking of his own, and then in the College Seminar discusses them from his own point of view with his colleagues and professors, preferably in limited groups. I am sure under such a system his powers of analysis as well as synthesis will be better developed, and his efforts, though irksome in the beginning, will soon enable him to carve out his own intellectual empire. All these, however, presuppose a sound secondary education.

“The question may be asked, if the lecture system be abolished, what should be the function of professors? The answer is obvious—the function of the professor should be mainly original research. Where he feels he has something to impart, he lectures, he discourses, and thus keeps the spirit of enquiry for ever alive and growing in this intellectual democracy. In the words of Bertrand Russell, skill in pedagogy in University teaching is no longer important. * * * * *

“I have, so far, pointed out four of the main defects of our University educational system ; the medium of study, the absence of elimination, the system of compulsory lectures, and the non-participation of students in the organisation. Of the many other defects probably the one that deserves best consideration is the notion of regarding Universities as preserves for people with a hall-mark. This exclusiveness had a meaning so long as we believed that our system of preparatory education was infallible and that we could include within its fold all our educable people. Such claims are on the very face of them absurd, and when once we admit that the Universities should function as great research centres, their portals should be opened wide to any one, hall-marked or not, who has given evidence of originality or keenness. It will be difficult for any educationist to assert that such a catholicity will not make for

much progress. On the contrary, knowing what a minute fraction of our people are receiving education, the hopeful uncertainty of full many a flower being born to blush unseen, would justify this departure from the orthodox notion of exclusiveness. If one took a census of the greatest of world's men and women, I fear he would be surprised to discover that the majority of them owe very little to Universities or indeed to any educational system. Shakespeare knew little Greek and less Latin. Our Keshab Chandra Sen and Rabindra Nath, Sarat Chandra Chatterjee, the prince of novelists and story-writers, Girish Chandra Ghose, the foremost of our dramatists, never crossed the threshold of a University.²⁴ Whilst on the one hand, however, the charge of handling mediocrity in the University system is not altogether unfounded the current Emersonian aphorism that "Universities are hostile to genius", is, on the other hand, not wholly justifiable. Whilst Universities should be anxious to invite real workers for human progress, we on our part should see that they are rendered independent to do so."

If I may quote from Mr. Wells, "they (future Universities) will offer no general education at all, no graduation in arts or science or wisdom. The only students who will come to them will be young people who are specially attracted and who want to work in close relation as assistants, secretaries, special pupils, collateral investigators with the devoted and distinguished men whose results are teaching all the world."

²⁴ Both Girish Chandra and Sarat Chandra have been vastly read. To quote a writer in the *Patrika* (26-6-31) :—

"Girish Chandra was a voracious reader. He could digest very easily what he used to read. Like a scholar he confined himself in his younger days within the four walls of his sanctum for years together and this habit he maintained till he breathed his last." As for Sarat Chandra it is enough to go through his tiny little booklet *मारीर मूल्य* (The Price of Women). The references in the footnotes alone would convince one how well-read he is.

VII.—GLAMOUR OF FOREIGN DEGREE—SLAVE MENTALITY—
INFERIORITY COMPLEX.

It is one of the manifold misfortunes of a subject people that it loses self-respect and esteem and learns to appraise everything from the point of view of the dominant race. I have often spoken of this tendency amongst our educated countrymen and the "cultural conquest" which has taken place in a very subtle, insidious manner. Our rulers, also, in a variety of ways, have encouraged the propagation of this spirit among our countrymen.

Emerson rightly says:—"It is for want of self-culture that the superstition of Travelling, whose idols are Italy, England, Egypt, retains its fascination for all educated Americans. They who made England, Italy, or Greece venerable in the imagination, did so by sticking fast where they were, like an axis of the earth. In manly hours we feel that duty is our place. Travelling is a fool's paradise."

In order to qualify themselves for the higher posts it was laid down that students should proceed to England and undergo all the expenses and hardships incidental to a training in a foreign land in a foreign tongue, thousands of miles from home, on the off-chance of success in a keen competition. In this manner a limited number of Indians during the last sixty years or so have secured admission into the Imperial Branches of the Civil Service including medicine and engineering. Graduates of the indigenous Universities have been admitted into the self-same services but they have as a rule occupied an inferior status. Thus a novel caste-system has been allowed to spring up. The I. C. S. and the I. M. S. and the I. E. S., as belonging to the superior hierarchy, give themselves airs and look down upon the so-called "lower" members of the respective service.

The glamour of a foreign, specially British degree or qualification has been the fruitful cause of a grave wastage of not only money but also of time and energy. A recent report

on the work of the Education Department, London, issued from the office of the High Commissioner for India says that the total number of students in England, or the Continent and the U. S. A. is not far short of 2,500. It has been calculated that about a crore of rupees is thus annually drained out of India, for which she gets a very poor and inadequate return. In the report the following weighty observations occur :

GRAVE WASTAGE

“Despite the rapid Indianization of the various services, and of the fact that the large majority of appointments formerly made in this country are now made in India itself, and that applicants with Indian university qualifications only are equally eligible, the belief that a candidate who has been to this country will have an advantage over his competitor who has stayed at home dies hard. It is this class which contains the largest proportion of those who are content to take vague courses in Arts or Science, etc., which, even if successfully completed, are not in themselves a qualification for definite employment of any kind, and, what is more important, could have equally well been taken at Indian universities ; of course, many students of this type read for the Bar, and are also to be found among the unsuccessful candidates at the London examination for the Indian Civil Service. It is significant to note that of the 266 candidates who appeared at the examination held in August 1928, no less than 170 were Indians, only 17 of whom were successful.

“It is among this class of students that there is also to be found those who have come with little or no prior qualifications which would entitle them to begin a degree or other course in this country. It is true that there are each year a few whose keenness and courage in making the long journey with totally insufficient funds and with no guarantee of regular remittances merit a success which is denied to them because of their lack of means and of the necessary preliminary training. But in the majority of cases it is not too much to say that they appear

merely to have drifted here, where they soon become a source of anxiety to the parents or guardians who have thoughtlessly allowed them to leave India, as well as a cause of trouble to university or other authorities in this country. If, as is frequently the case, their remittances fail, or for other reasons they come to the end of their resources, this Office is called upon to make arrangements for their return to India.

“These things have been said before, but they need to be repeated, if Indian public opinion is to be stirred to action. It is no exaggeration to say that India ultimately gains nothing, either materially or intellectually, from the exodus of an appreciable proportion of the young students who annually proceed abroad. They return to their homes in many cases disgruntled and embittered, with no definite qualification for employment of any kind and only *too often completely divorced in thought or feeling from the kindly family life and interests of their own people* (the italics are mine). It can scarcely be denied that there is each year a grave wastage which ought to receive the serious consideration of all those who have at heart the interest and welfare of the youngmen of India.”

It is a remarkable fact that the holders of the foreign university degrees, though they consider themselves as sacrosanct, when weighed in the balance side by side with the local university products are often found wanting.

Take, for instance, metaphysics. The name of B. N. Seal stands first and foremost ; his encyclopædic knowledge is at once the envy and despair of Indian students of Philosophy. It is true he has not published any work which would make his name known abroad, but successive generations of pupils who have sat at his feet testify their obligations to his inspiration. He is like Socrates, who speaks only through his disciples.

Among other professors of Philosophy who have shone in the Calcutta University the names of Hiralal Haldar, Radhakrishnan and Surendranath Das Gupta stand conspicuous, and it is a singular fact that only one of them has an additional embellishment of a “foreign” university. It is true that the

latter two have gone to Europe but only in the capacity of interpreters of the East to the West.

It is a curious fact again that the most successful teachers of English in the Calcutta University or in the colleges affiliated are not those who have had their training at Oxford and Cambridge but the *locally* manufactured alumni. It is only necessary to mention the names of Lal Gopal Bannerjee, Heramba Chandra Maitra, Nripendra Bannerjee, Jitendra Banerjee, Profulla Ghose and the late Lalit Mohan Bannerjee.

Again, one who has kept terms and eaten dinners at one of the Inns of Court and returns as a Barrister-at-law has hitherto been allowed at the Calcutta High Court to enjoy certain privileges denied to his less-favoured comrade who practises on the strength of a degree of the local university and for this reason the former often gives himself airs.

The members of the legal profession are not, however, favourably circumstanced like those belonging to the "Heaven-born-services"—they have to work their way upwards by keen and fair competition in an open field. No wonder that the vakil often scores over the barrister and brings ridicule upon the latter. In forensic abilities a Vashyam Iyengar or a Rashbehari Ghosh has been simply matchless. Of the fifty six holders of Tagore Law-lecturerships thirty eight are Indians of whom again twenty-eight owe their training to local Universities. Their lectures include some of the best ever delivered and are quoted as standard works on Law. The names that come uppermost to my mind are those of Rashbehari Ghosh, Gurudas Bannerjee, Golap Sarker, Priyanath Sen and Ashutosh Mukherjee.

Coming to the departments of History and Archæology we find that those who have earned a reputation are Jadunath Sarkar, Akshaya Kumar Maitra, Ramesh Chandra Majumdar, Nalini Kanta Bhattashali and Surendranath Sen ; and on the Bombay side Bhaudaji who never learned English and the Bhandarkars—father and son—stand conspicuous. Needless to

mention that none of these were educated abroad and none except Dr. Sen, can boast of, or cared for, a foreign hall-mark.

Dr. Sen it is true has got an additional foreign degree appended to his name ; but he had already earned his fame as a graduate of the Calcutta University.

Taking into consideration the physical sciences it may be mentioned that Prof. Raman of "Raman Effect" is practically self-taught and all his brilliant researches have been carried on in the laboratories of Calcutta.²⁵ An account of the contributions of Dhar, Ghosh, Mukherjee, Saha, Bose, etc., has already been referred to (*vide* : Chs. XIII, XIV) ; it is only necessary to lay once more stress upon the fact that every one of them has distinguished himself by his work in the laboratories of Calcutta. It may be noted here that in some of my public addresses I have drawn attention to the fact that Ghosh and Saha did not care to have a D.Sc., (Lond.) suffixed to their names (though they rounded off their education in the London Colleges) for fear they would be thereby lowering the doctorate of their own alma-mater. Satyendra Nath Bose (of Bose-Einstein-statistics fame) although he went abroad for a time to rub shoulders with eminent mathematicians and physicists, also from the same motives, fought shy of a foreign degree.

In this connection the case of another beloved pupil of mine needs prominent mention—I mean Mr. Priyadarajan Ray. (See ante p. 192).

It is a hopeful sign that much of what I have written above is now being slowly realised by the Indians themselves studying in England. At the Indian Students' Conference in London, (Dec., 1931) under Economic Value of English Degrees, Mr. Anath Nath Bose, of Viswabharati, said that it was a sad confession for Indians to make that a degree at an Indian

²⁵ The above was written long before the award of the Nobel Prize. The Calcutta Corporation in presenting recently (27-6-31) a civic address to Prof. Raman did well in referring to this aspect in his brilliant career :

"Working in an Indian Laboratory, with a purely Indian training, you have achieved results of the highest value, thus demonstrating the high level of efficiency attained by this country in the matter of scientific research."

university had not the same economic value as a British university degree. "I do not believe," said Mr. Bose, "that a man cannot get as good an education from two years at an Indian university as he could from two years at an English university. Yet it is the man who takes an English degree who gets the high post and the fat salary. It is a question of prestige, and there is something political behind the prestige. We must remove the false idea of the prestige which is carried by a foreign degree. We must raise the status of the Indian university."

The training of Indian lawyers in England was deplored by Mr. M. V. Gangadharan. He said that he failed to see that an English trained Lawyer should be more effective in India than one trained in India. "I look forward to the day when an Indian student will be an object of curiosity in the common rooms of the Inns of Court," said Mr. Gangadharan. "Until recently" continued he, "there were some advantages to be gained by English-trained lawyers, but now that those advantages have been withdrawn there is less justification than ever for Indians to be trained in this country for a legal career."

I fondly hope it is high time that the attention of my countrymen were drawn to such insane craze for University degrees, foreign or otherwise. Bengal is drifting to an economic ruin for her thoughtlessness and it must cease. There is yet time to mend our ways. One must not, however, think that all I have said about the inordinate and meaningless craze of our students studying in universities, is levelled against the University Culture itself. University is for the gifted few and the rest—the worldlywise average—ought to think of the hard world and how to fit in it early. Useless and appalling waste of time is involved in pursuit of higher culture that counts for little when the real struggle for existence begins. This is my sad experience. The danger signal is already there and our guardians and students, who still hanker after University hall-mark and specially foreign qualifications, should ponder over it. For, to be forewarned is to be forearmed.

CHAPTER XIX.

INDUSTRY PRECEDES TECHNOLOGICAL INSTITUTE— THE GREAT ILLUSION—TECHNOLOGY BEFORE INDUSTRY —THE CART BEFORE THE HORSE.

Scholarly China has failed to produce industry. Baker : *Explaining China*.

Some sixty years ago, Japan, when confronted by the need for developing industry within the shortest possible time, adopted the expedient of employing, for a term of years, a full complement of experienced foreigners to whom she gave administrative control over the plant which was built and operated under their direction. To every foreign manager, and to every one of his important subordinates, they appointed a Japanese assistant whose main duties were neither social nor ornamental, but the task of learning how to do the work as well as the foreign chief could do it. *Ibid*.

I. WAR AND INDUSTRY.

In August 1914 the Great War broke out and it had a far-reaching effect on the Chemical World. England now keenly felt the superiority of Germany in Chemical Research and its application to industry. Her empire was world-wide and she could draw her supplies from every quarter of the globe in spite of the terrible blow inflicted on her mercantile marine by the German submarines. Ships laden with wheat from India and America, also with an abundant supply of provisions in the shape of tinned meat and canned fruits, and last but not least, of ammunition from the United States reached her shores with fair regularity. Germany, on the other hand, felt severely the stringency of the blockade, and though practically surrounded, she was able to protract the war as long as she did, because of the signal help rendered to her at this crisis by her chemists. Nitric acid and the nitrates are the chief constituents of the explosives ; the nitrate of

sodium or Chili saltpetre as it is called is also an important fertiliser. Cut off from all external supply, the German chemists now began to look about and devise methods for the manufacture of nitric acid. Already in Sweden, her abundant natural source of water power had enabled her to start hydro-electric installations and manufacture nitric acid direct from atmospheric air by means of the Eýde process. This source of supply was no doubt open to Germany but probably it was inadequate and meagre. She had to pay for it. Haber in Germany now perfected his methods of synthesis of ammonia direct from the constituent elements and its oxidation into nitric acid.

When the French Revolution broke out England entered into a coalition with some of the continental powers and France was subjected to a similar blockade. Her supply of soda and sugar was similarly stopped. The Republic made an appeal to the patriotism of her citizens to devise methods so that these two essential articles might be manufactured within her own borders. The result was the devising of the Le-Blanc process of making soda direct from common salt, and sugar from beet-root. All these only illustrate the force of the adage—necessity is the mother of invention.

The British chemists and scientists were not to be behind-hand ; they knew well that their great rival was far ahead in the chemical industry and they had a long way to travel to overtake her. The patriotic fervour of England was roused to the boiling point. A country which had produced a Newton, a Faraday and a Ramsay was not destined to lag behind even in chemical warfare. It is not necessary for me to relate here all that she did at this critical juncture. It is enough to say that she proved equal to the occasion. I received a letter from the President of the London Chemical Society invoking my humble help and co-operation in this respect. In the Chemical Department of the Presidency College, our ordinary work, including research by the advanced students, did not on the whole suffer. Chandra Bhusan Bhaduri who had been the

Demonstrator for the previous quarter of a century always took care to draw up the annual indents of the chemicals and apparatus with judgment. There was a reserve stock in our store, which could be drawn upon. We also succeeded in preparing some fine chemicals which hitherto could only be procured from Germany. But substantial service could only be rendered through our Firm, the Bengal Chemical and Pharmaceutical Works. Large quantities of nitric acid were supplied to the Government. The fire-extinguisher which one of our chemists had devised was very much in demand by the Military Department. Big assortments of these were sent to Mesopotamia for the depots of gunpowder and explosives. Sodium thiosulphate (the 'hypo' of the photographers) was also manufactured on a large scale by a process worked out by our chemists. Considerable quantities of caffeine were also extracted from "tea-dust" by means of a quickly improvised method and exported. In our workshop, along with other apparatus, chemical balances of the ordinary type of Sartorius were also constructed. Altogether the activity of the several departments was phenomenal.

India played a conspicuous part in the War. It was the Indian contingent which saved the critical situation at the battle of Ypres. She supplied the labour corps to Mesopotamia. Her railway plants were torn up by the roots and shipped off to Basra. The feudatory princes, from the highest to the lowest, came forward with a liberal supply of contingents and pecuniary help. No less signal service was rendered by the Tata Iron Works. The import of steel from Europe and America was stopped and the Government commanded its entire output.

Our rulers were profuse in their admiration for the great indigenous enterprises and the service rendered by them at this critical juncture. The Indian Industrial Commission which was appointed during 1916-18 made out a strong case for our country being made self-contained. "The experience of the war itself has been responsible for a new attitude on the part

of both Government and leading industrialists. They realise that it is necessary to create in India the manufactories that are indispensable for industrial self-sufficiency and for national defence and that it is no longer possible to rely on free importation of essential articles in time of War”.

It is to be noted that I had occasion to submit a strong note of dissent to the Chemical Service Committee where I had to point out how most absurd and fantastic notions are entertained by our countrymen on the capability of a Technical Institute. Our Universities and Educational Institutions in general impart education which, it is urged, is too much of a literary character ; all that you have to do is to substitute technical for literary instruction, and industries will spring up magically all round.

Sir M. Visweswaraya's passionate plea for the creation of a Technological University is based upon this obsession:—e.g. “The educational system should arrange to train a sufficiency of natural leaders, such as administrators, entrepreneurs and technical experts taken from young persons qualified by their natural ability and aptitude. It is these two classes, namely persons of directing ability on the one hand and the great masses of working population on the other, that count most in the country's economic life. The two working together create business. The intermediate class, viz. foremen, middlemen and skilled workmen, will grow up automatically although they too will need, and will benefit by education appropriate to their class.” *Vide* “Fifth Convocation Address at Andhra University”, Dec. 2, 1931.

Never was a greater delusion entertained. In every country, industrial progress has preceded progress in science and technology. Take the case of earthenware, porcelain and pottery. The very word chinaware carries us back to a remote past when China had made a marvellous development of the ceramic art, and Japan had also followed in her wake.

“Porcelain was not known to the Romans, although the Chinese have manufactured it for ages. [In *Memoirs of*

a *Chinese Revolutionary*, Sun-Yat-Sen giving an account of it says that : "the Chinese craftsmen who made this kind of porcelain were *ignorant of chemistry and physics*." (p. 95).] Egyptian tombs also contain remains of vessels of a material closely allied to porcelain. The art of glazing pottery with the oxides of lead and tin was generally practised in Europe during the Middle Ages, and we find a description of the processes then adopted in the writings of the alchemists Peter Bonus and Albertus Magnus at the beginning of the thirteenth century. In the following century the potter's art made great strides. Agricola published many receipts concerning this manufacture. * * *

"Amongst those who have been most active in promoting the progress of the ceramic art the name of Bernard Palissy stands pre-eminent. Devoting himself with self-sacrificing assiduity to the production of glazed and coloured faience, Palissy laid the foundation of modern art pottery. His numerous writings, published during the latter half of the sixteenth century spread a knowledge of his experimental methods throughout Europe ; but his works *L'Art de Terre et des Terres d' Argile* are confined to a description of the manufacture of earthenware ; it was not until the year 1709 that the method of making porcelain was discovered by Bötticher and in the following year the celebrated porcelain factory at Meissen, in Saxony, was established.

"The mode of preparation of the Meissen porcelain being naturally kept secret, the King of Prussia instructed the celebrated chemist Pott to determine the nature of the materials used, and he, being unable to obtain any satisfactory information, was obliged to investigate the properties of those substances which might possibly be used in the manufacture, mixed in varied proportions ; for this purpose Pott is said to have made no fewer than 30,000 experiments. To these we are mainly indebted for the establishment of the reactions which occur when various minerals are heated, and much valuable information

applicable to the manufacture of porcelain was thus obtained. About the same time Réaumur endeavoured to ascertain the secret of porcelain-making, and found that it is produced by the union of two earths, one of which is fusible, whilst the other is infusible at the same temperature, so that by the firing of an intimate mixture a non-porous, translucent mass is formed.

“His investigations were taken up in the year 1758 by Lauraguais, D’Arcet, and Legacy in France, and by the help of Macquer they succeeded in re-discovering the art of porcelain-making and in the year 1769 the celebrated porcelain manufactory of Sèvres was founded.

“Even up to the beginning of the nineteenth century real porcelain was a material of great rarity and value. At the present day, however, it is cheap, and is employed for making the most ordinary articles of everyday use”.—Roscoe and Schorlemmer: vol. ii, ed. 1923.

The historical account quoted above illustrates the almost insuperable difficulties besetting the path of a pioneer of industries in this country. Europe and Japan have got years of traditions and of inherited and accumulated experience behind her and they utilise their advantages with almost deadly effect against us by dumping into our local market the products of their factories.¹ As one in intimate touch with the Calcutta Pottery Works and several other industries I have realised what infinite patience, how much heavy initial loss, what ungrudging sacrifice of time and energy are necessary before a fairly successful start can be made.

The method hitherto followed has been to send a promising youngman abroad to learn the technique of an industry so that on his return home with the necessary expert knowledge he may be in a position to start an industry. This sort of easy-

¹ At present Japan and Czechoslovakia are the formidable rivals in the Calcutta Market.

going and happy-go-lucky method has ended in disastrous failures.

When the youngman comes back with his special training he finds himself at sea. He must find capital, he must be competent to float a company, he must be able to organise business, he must be able to find raw material and sell the finished product. In other words, he must combine in himself several conflicting qualifications. Even if he is fortunate in securing a capitalist, as is sometimes the case, the real difficulty comes in when he actually begins his operations. The youngman sent abroad has perhaps been trained in a country where conditions about climate, raw-products and other factors differ materially from those prevailing in India and has generally no previous knowledge of local conditions in his own country. In Europe he has seen undertakings on a colossal scale with a huge capital outlay. Then again, trained artisans are always available there. Take the case of manufacture of pottery. In Europe the quality of sand, clay or feldspar is quite different from that in India.

Moreover, as is often the case, it may be found that his practical knowledge has been gained in a technological institute where only demonstrations on a small scale were given to supplement theoretical teaching and this knowledge is quite inadequate for the purpose of manufacture on a commercial scale. It is no easy task to secure access to factories so that the actual processes may be learned firsthand. Business concerns are not exactly philanthropic institutions. They are in no particular hurry to impart trade secrets, which they have picked up after years of labour and enormous expenditure of money.

Emerson says about trade-jealousy (*vide*, ante p. 93) that a chemist will easily confide his secret to a carpenter—a secret which he will not confide to his brother chemist for all the world.

A youngman sent abroad, however high his academic qualifications may be—even those of a first class M. Sc. in Chemistry—has often proved to be a failure. Similar mistaken

notions have prevailed even in China and have resulted in disastrous consequences. The following extract from a highly discriminating author, though it relates to modern China, applies with greater force to our own conditions. No apology is therefore needed for quoting it here *in extenso*.

"In the Straits Settlement and neighbouring territory, the Chinese have been able to gain a dominant position, not only in trade, but also in production ; witness the tin industry. Under stable law, reasonable taxation and just adjudication of their disputes, as found in such places, the Chinese out-trade and out-produce every other race on the globe.

"Nevertheless, it will be well to remember that in these foreign places, the founders of the Chinese prosperity are men who went there in humble circumstances, many of them as coolies. By virtue of qualities which make a man leader of the gang, these men began to rise. Freed somewhat from the handicap of innumerable relatives, they had money to invest. Soon they could take a small contract. They remained close enough to their men to know which were capable foremen, which could take on greater responsibility, which were restrained by fear and which encouraged by success. They built up their organisation as they went along. Probably they learned to read enough English or Dutch to gain something of an outlook concerning their business. At the end of a long and industrious life they had so developed the rules and customs by which the business was conducted, that an elected president, or manager, could continue successfully along the lines laid down for him"—Baker : *op. cit.*, pp. 179-80.

"This is in sharp contrast to many of the factories which have been built in such places as Shanghai and Canton by Chinese capitalists. Such a man sends his sons abroad for an education. The sons study business administration and technical subjects. They perceive clearly the absurdity of large exports of raw materials from China and the re-import of the same materials in manufactured form. They realise the profits which could be made if this cost of transporta-

tion two ways, foreign tariffs and the high foreign scales of wages could be saved. It is easily demonstrated to father. They assure him that they know the business. Did they not graduate in Engineering? Did they not spend two summers in such a factory? Very well, father sets aside a certain sum, estimated to be enough to build the factory. The work begins; there are difficulties with contractors, delays, shoddy work which when rejected brings on a strike. The construction costs more than was expected; it always does. Father is rather grim about it, but he lends them enough to finish the plant. Work begins. There is trouble with the machinery; new machines always require a little adjustment. People begin to say things. Working capital begins to be scarce. Chinese firms invariably underestimate their needs in this direction. The turnover is much slower in China than in America. Collections are slower. Bad debts are more hopeless. If, on the top of these troubles, a quarrel between two foremen should bring about a strike, these unseasoned, youthful managers are almost sure to quit. They have 'lost face'. Their family has 'lost face'. They have other opportunities. They conclude to seek a government post. And another chimney is added to the hundreds which lend interest but not smoke to the skyline.

"Now, if these youngmen had worked up to their factory from penniless beginnings, had invested in it money which they had earned by the sweat of their brows and saved at the expense of their appetites, had learned the ways of materials, of contractors, of labourers by years of firsthand contract, not only would their difficulties have been fewer, but they would have so much at stake, that stake would be so much like their life blood, that every effort, every device, human and mechanical, every friend would be drawn upon to save it. There would be no light 'chucking up' of the job; no running away from the responsibility. Almost every important business experiences sooner or later a 'darkest hour'; live through that and success comes. But to 'live through' requires a fortitude which too frequently appears to be lacking in the otherwise well-equipped youngmen who essay the task of managing a modern factory in China." Again: "Scholarly China has failed to produce Industry".—*op. cit.*, pp. 180-182.

But the tragedy of the failure of "scholarly" men starting industries has been brought home to me by certain conspicuous instances. I have known Indian graduates in science (Ph. D.'s) in certain American and German centres of learning securing admissions into Chemical and Electrical Firms. On their return they have become simply travelling canvassers of those firms!

II.—TRUSTS AND DUMPING.

In Europe and America manufacturers have recourse to mass-production ; the average daily outturn of a factory would simply stagger one and it suits their purpose to do it on a colossal scale as they generally have a command of the world market. The opening of the Suez Canal coupled with the modern accelerated steamer service enables them to reach and capture distant markets ; to sell at a loss if necessary so as to starve out the indigenous rivals, already struggling for existence.²

Take for instance, the soap-industry with which I happen to be connected. Alkali, an important ingredient, has to be imported. The fluctuations in the oil market are great. It is necessary to study carefully the ups and downs in the prices in order to store up the raw materials in advance so that when a big contract is accepted, one may not be a loser in the bargain. While the Indian pioneer is struggling hard to get a foot-hold, his formidable foreign competitor, who has got a command—I had almost said a monopoly of the world market—is dumping his products so as to starve him out. In fact, it is a struggle between a dwarf and a giant.

The following two extracts which relate to the foundation of the Imperial Chemical Industries will throw additional light upon the subject.

“The easier and more extravagant life which is characteristic of the present day is made possible by modern methods and modern experiences. In the chemical industry there are many special factors which seem to us to have a bearing on the question of amalgamations. The manufacture of chemicals has undergone, and is yet undergoing, extremely rapid change ;

² Cf. “A first-class power to-day is granted unquestioned the right to limit trade by anti-dumping or anti-luxury laws, but India’s attempt in that direction is bitterly opposed as unpermissible.” Upton Close : *The Revolt of Asia*, pp. 104-5.

consider the industry as it was thirty or forty years ago, and what it is now.

"In order to exist, the chemical manufacturer of to-day must keep in touch with the latest scientific information about his own products ; he must have a trained staff which can try in the laboratory experiments on a small scale, he must every now and then be prepared to risk spending a few thousand pounds on a large scale experiment, hoping that his judgment may be correct three times out of four or five. These large scale experiments are costly things, and it is far easier to undertake them when you have many works at your disposal, and can be confident that they are not, each of them, working at the same problem in secret and independently, and then finally setting up in the aggregate a capacity of production three times as great as the probable demand. Amalgamations, inter-locked companies, and such organisations are not novel. We have seen the United Alkali Company commence in 1890 as an amalgamation of many smaller concerns. We have watched the growth of the Dyestuffs Corporation, we have watched since about the year 1902 the growth of the many firms now forming the Brunner Mond group. We have watched the gradual development of the great enterprises included in the Nobel Industries. We have seen the amalgamation of several firms in the lead and white lead industries. It is sufficient that those who began to practice amalgamation five and twenty years ago are willing to continue the operation to-day. There are very many reasons for this. We will mention one only. Research is far easier for an amalgamation, and far less risky, than for an isolated firm.

"The board of the new company will form a supervising and connecting link in finance and policy, in exchange of knowledge and information and will enable the British Chemical Industry to deal with similar large groups in other countries on terms of equality, enable them to speak with a united voice, and instead of leaving it to individual units to make arrangements for the world's competitive conditions as best they can.

will give them all the authority and prestige and advantages of a great combination.

"In these days, when capital expenditure on modern chemical plant runs into many millions of pounds, specialisation of products and the most efficient use of capital as well as of technical processes become a vital factor to success, not only in the chemical industry, but in all modern industry.

"Modern mergers are not created for the purpose of creating monopolies or for inflating prices, when managed by able businessmen. They are created for the purpose of realising the best economic results which both capital and labour will share to the best advantage, to enable varieties of industry to form an insurance against fluctuations of markets and prices in individual products. In fact, for the shareholder, as well as for the workmen, fusion acts as a form of insurance against those risks in industry which are inherent and cannot be avoided, even by the most skilful management.

"A combination such as has been formed ought to be in a position second to none to keep the country and the Empire in the first and leading rank of an industry which is essential for the national safety and fundamentally the basis of a vast superstructure of other industries depending upon its products."—*Chemistry and Industry*, 1926, pp. 789-91.

III. CHEMICAL MANUFACTURE AND MODERN INDUSTRY.

"The growth of chemical manufacture revolutionises the whole character of modern industry. Nobody realises this better than Lord Melchett and his colleagues of the Imperial Chemical Industries Ltd. This concern now virtually controls the entire production of chemical goods in this country, as well as in most other parts of the Empire. It also extends its tentacles to foreign lands including Germany and America. The Imperial Chemical Industries was formed in 1926 primarily as a holding company for four others, namely—Brunner,

Mond & Co., United Alkali Co., Nobel Industries Ltd., and British Dye-stuffs Corporation Limited.

“By to-day it has a controlling interest in at least seventy-five concerns. The I. C. I. has an authorised share capital of £95 millions. Of this £76¾ millions has been issued.

“Profits for 1928 reached nearly six million pounds.”

The almost insuperable difficulties which beset the path of a pioneer will be realised if one studies the mighty efforts made by the late J. N. Tata in founding the Iron and Steel Works inseparably associated with his name. Although he did not live to see the fruition of the great enterprise, it was he who conceived it and did all the preliminary pioneering, up-hill, arduous investigations, which cost him more than four lakhs and a half. With the help of able prospectors Tata carefully studied the local conditions favourable for the Works, namely an inexhaustible supply of the ore and the vicinity of coal and lime-stone.

He had samples of the ore and coal analysed both in England and Germany and himself undertook tedious long voyages to Germany and America in the evening of his life so that he might consult on the spot eminent experts in the iron and steel industry. It is not necessary to give here a detailed account of all that Tata's successors did to bring to a head the grand scheme. It is enough to state that the actual construction of the plant was begun at Sakchi in 1908 and the first iron was turned out of the furnace on December 2, 1911. During the War the Tata Works was of signal service to the country and the Government, and proved to demonstration what an indigenous key industry can do when the supply of an indispensable article is cut off.

But as soon as the War was over, Germany and Belgium began to flood the Indian market with cheaper steel with which the Tata's steel could not compete. A countervailing duty on imported Steel had to be imposed to maintain the very existence of the Company, out of which no less than

rupees two crores and a half have been paid to it in the shape of bounty in a couple of years. In other words, it means that even the poor taxpayer has to pay some $12\frac{1}{2}$ per cent. extra for every T-iron or sheet of corrugated iron he uses.³

If the Tata Iron Works, with its huge capital, with the enormous natural advantages due to its location, with its trained experts, finds it impossible to stand world competition without considerable aid from the Government, the fate of the other pioneer industrial concerns in India can easily be imagined.

IV. EXPERT KNOWLEDGE vs. BUSINESS.

But the really serious obstacle in the progress of science and technology in India lies in another direction. Reluctance to take part in industrial concerns is inherent in our national character, especially in the Bengali. In Europe as also in ancient India the chemical processes involved in, say, metallurgy, dyeing etc., were all discovered empirically long before their modern scientific explanations were forthcoming. A few notable instances have been given in my *History of Hindu Chemistry*. The art of making and tempering steel, from which the famous Damascus blades were made, was first discovered in India where it remained stationary for at least a thousand years and has recently died out on account of competition with the West.⁴

³ The above was written 4 or 5 years ago; latterly under *Imperial Preference*, 'the Works' is getting a royalty, so to speak, of 80 lakhs of rupees or more.

⁴ "Sir Robert Hadfield referred in this connection to an examination conducted at his works on iron from the famous Pillar of Delhi which is reputed to be over 1000 years old. He said that the analysis and tests to which the material had been subjected showed the iron to be a wonderful piece of work. It certainly had properties which enabled it to resist corrosion to a much greater extent than modern wrought iron.

* * * * *

It was a most remarkable fact that in spite of all scientific advance which had been made in the metallurgical field the Pillar of Delhi was,

In Europe on the other hand, where science has ever been harnessed to the service of Industry, miracles have been worked in metallurgical processes.

At present by the Bessemer process twenty tons of steel are turned out in a single operation. Almost every day new improvements are being introduced. The addition of chromium, tungsten and vanadium to the steel has almost revolutionised steel-making for casting cannon and for motor-car frames. Similarly the sulphuric acid manufacture with the introduction of Gay-Lussac and Glover's towers and the 'contact' process has increased the output by leaps and bounds. Take again the modern rubber industry. The consumption of caoutchouc has been advancing *pari passu* with the requirements of this accessory of modern civilisation, especially in tyre-making. The conversion of raw material into the vulcanised product involves chemical processes of divers sorts. Nor need we refer to the dye-works in Germany e.g. the Badische Anilin Fabrik, some of which engage as many as 250 chemists or more. I have recently (1926) returned from a visit to Merck's at Darmstadt. The stupendous dimensions of the works filled me with awe and wonder. But the Research Department impressed me most. Here eminent specialists are at work not only in synthetically producing new drugs but also investigating their therapeutic effects.

Take again the several Electric Firms in America, England and on the Continent. The articles and appliances they annually manufacture, if valued in pounds sterling, will

as far as he could judge, a metal of much better quality than anything which could be produced to-day. He made that statement with a full sense of responsibility. Some of the secrets of metallurgy had died out".—*Makers of Modern Chemistry*, p. 110.

Regarding the Pillar, Roscoe and Schorlemmer write in their Treatise on Chemistry: "It is not an easy operation at the present day to forge such a mass with our largest rolls and steam-hammers; how this could be effected by the rude hand-labour of the Hindus we are at a loss to understand".

amount to hundreds of millions. Here too the enormous development has been made possible by the harmonious co-operation between existing industries and laboratory researchers.

As Lord Melchett himself said, he sincerely believed "that the chemist will solve the present economic and industrial problems of the world." "Highly trained University men", he said, "are required for every part of our business activities to-day.....you have to carry the scientific idea through all business." He fostered in every possible way "the policy of aiding scientific research in the Universities of Great Britain and thus producing a continuous supply of men well fitted to do their part in the development of the industries of the country."—*Journ. Chem. Soc.* 1931, pp. 3374 and 3379.

Lord Melchett's remarks apply with considerable force to the industries of Europe and America most of which have been in existence for the last two centuries or more and they must secure the talents of the best trained researchers. This is especially indispensable to the modern dye-industries based upon coal-tar products.

Modern chemical and metallurgical works or electrical firms have to face keen world competition and in order that they might exist it is necessary to enlist the services of the best scientific experts. It does not mean that the proprietors thereof (either as individuals or as share-holders in the case of Limited Companies) must be themselves scientists. All that is needed is that they should have culture, intelligence and foresight enough to realise that in these days no rule-of-thumb methods would do but that they should be always on the alert and utilise the most advanced and up-to-date knowledge. Andrew Carnegie, J. N. Tata, Lord Leverhulme and Swarup Chand Hukum Chand, to mention only a few names, have succeeded so well because they realised at the outset the importance of seeking the service of experts. But the expert, in these days, plays only a minor part *in the starting of industries*, I have already quoted Pierpont Morgan the great financier who says :

"I can hire any expert for 250 dollars and make 250 thousand dollars with the information he gives me, but he can't make the money himself and he can't hire me to do it for him".

The only successful electric steel-welding works located near Calcutta owes its existence to the pluck and resourcefulness of Sir Swarup Chand Hukum Chand who is innocent of all scientific knowledge. He is a big business magnate and he has secured the services of experts ; surely he did not wait to learn the principles of chemistry and electro-metallurgy before he could make up his mind to start the works.

I have visited the *Technische Hochschule* at Charlottenburg (Berlin) as also its counterparts at Zurich and Manchester and I should be the last person to minimise the importance of similar institutions. But I maintain that only the scientific principles underlying manufacturing processes can be learnt at such institutes: The actual manufacturing knowledge—how to produce things which can be placed in the World Market at competitive prices—can only be acquired in existing industries.

That practical knowledge acquired in workshops is sometimes more helpful to industries than knowledge acquired by students in Technological Institutes was recently illustrated by a case at the Bengal C. & P. Works. We had recently occasion to instal a sulphuric acid plant. Ordinarily the English patentee himself would have been asked to set up the plant and he would have naturally sent an expert for the purpose for which a heavy fee plus travelling and hotel expenses would have to be paid. Some fifteen years ago, we took a youngman who had only qualified in junior course of the Engineering Department of the National Council of Education. Being in close touch with chemical engineering he has grown in knowledge and experience with the gradual expansion and growth of our firm. He has acquired skill in his special line. We had no hesitation in entrusting him with the task of setting

up the acid plant. He followed closely and step by step the plans and specifications submitted by the patentee. The ingenuity and mastery over details which he brought to bear upon his task have extorted our unstinted admiration. He has even detected some flaws in the plan, which were admitted by the patentee. The plant which is perhaps the biggest of its kind in India is working smoothly. Now, in a technological institute a miniature plant (as is done in junior course class experiments) is shown illustrating the manufacture of sulphuric acid. Miniature models of *Taj Mahal* are often shown in exhibitions. One can no more erect a Taj from the toy model than he can the acid plant from the miniature models.

V. COLLEGE GRADUATES IN BUSINESS.

Is there no room then for the college educated youngman in business or industry? There is ; but only in exceptional cases ; provided he shakes himself free from queer notions imbibed during his scholastic career, and is prepared to begin *de novo* at the bottom as a novice and slowly works his way up. Under such conditions he proves to be of superior mettle. Says Carnegie :

“The graduates of our colleges and universities in former years graduated while yet in their teens. We have changed this, and graduates are older, as a rule, when they enter upon life’s struggle, but they are taught much more. Unless the young university-man employs his time to the very best advantage in acquiring knowledge, the pursuit of which he is to make the chief business of his life, he will enter business at a disadvantage with younger men who enter in their teens, although lacking in university education. This goes without saying.

“There is another great disadvantage which the older man (as graduate) has to overcome in most successful business establishments. There will be found in operation there a strict civil-service system and promotion without favour. It is,

therefore, most difficult to find admission to the service in any but the lowest grades. One has to begin at the foot, and this is better for all parties concerned, especially the young graduates.—*The Empire of Business*: pp. 206-208.

“* * The exceptional graduate should excel the exceptional non-graduate. He has more education, and education will always tell, the other qualities being equal. Take two men of equal natural ability, energy, and the same ambition and characteristics, and the man, who has received the best, widest, most suitable education, has the advantage over the other, undoubtedly.” *Ibid.*

This is well exemplified in the late Lord Melchett (Alfred Mond) who was one of the most successful of business magnates. He was educated at two British Universities and was a Bar-at-Law as well. But then he was born heir so to speak to one of the biggest alkali works founded by his father—the famous Ludwig Mond, who graduated at the University of Heidelberg and studied Chemistry under Kolbe and Bunsen. He entered into partnership with his friend John T. Brunner (head of Messrs. Hutchinsons' Chemical Works). Thus we read:

“The eight years between 1873 and 1881 were years of tremendous work and stress. Only through the genius, determination, and unremitting labour of the two partners was the enterprise brought to a successful issue.

“Thus for the first sixteen years of his life—the important formative years—the boy Alfred Mond saw from day to day the development of a great work and lived in an atmosphere of scientific labour and mighty deeds.” *Journ. Chem. Soc.*, 1931.

I have just mentioned the limitations even in the European and American world. In our country as shown above we have to fight against tremendous odds. The average European or American graduate has the dash, the pluck, the ‘go’ or the spirit of adventure and the determination to conquer, to which his Indian counterpart is a stranger. In our Chemical Works

there are as many as thirty graduates in science ; they do well enough as far as the appointed routine work is concerned ; but they seldom develop any initiative on their own account.

In Bengal, we are to-day faced with a serious problem. The Bengali, who has to depend on the non-Bengali for the sale of the very produce of his land e.g. jute, grain, oil-seeds, arecanuts etc., can scarcely be expected to run successful industries. For, the former not only requires scientific and technical knowledge but also business capacity of a high order which unfortunately, he has yet to develop. He is unable to find large capital for initial outlay. He has not yet been able to start a bank worth the name which will finance his enterprise. The Universities and Technical Schools of Bengal are producing their graduates or diploma-holders in any number. The teaching profession is already overcrowded and we are now confronted with the very serious problem of finding suitable careers and outlets for these young men.⁵

The lesson is obvious. A university-man sometimes does very well when appointed to a ready-made or going concern. But it is the self-made man with business instincts, struggling hard against adverse circumstances, who, as a rule, founds the business ; who is known as the "Entrepreneur".

I began this chapter with quotations at its heading from a keen observer on modern China. I conclude also with the sagacious remarks of another equally discriminating writer :—

⁵ Cf. My address in opening the Classified Trades Exhibition at Bombay, 27th August, 1930 :—"Some sixteen years ago the veteran editor of 'Modern Review' styled your humble lecturer as Doctor of Doctors, by which he of course meant the father of Doctors of Science. To-day I find to my infinite bewilderment that year in and year out, Doctors of Science are being manufactured not only in my own laboratory, but that my old pupils, holding chairs at the Universities of Calcutta, Dacca, Allahabad, Lahore and other places—are producing any number of Doctors of Science. In fact, if a catalogue were to be compiled of my chemical children and grandchildren as Doctors of Science, the number would be found to be simply appalling. And yet we are as helpless as newborn babes, as far as chemical industries are concerned".

"To be sure, China is still a predominantly agricultural country, but many trading and manufacturing centres have sprung up during the last thirty years and whether they have developed Chinese businessmen and Chinese workers have alike shown themselves capable of using the technique of modern industry.

"The Chinese can use western technique. They can organise and build—factories, railroads, trade unions and army divisions." Scott Nearing: *Whither China?* p. 182.

It will be seen that both the authors are unanimous in the considered opinion that what is requisite in the starting of industries is the combination of businessmen and workers who can utilise western technique by engaging the services, of course, of experts but not graduates in science or of Technological Institutes.

CHAPTER XX.

INDUSTRIAL ENTERPRISES.

A detailed account of the origin of the Bengal Chemical and Pharmaceutical Works has been given elsewhere (*vide* Ch. VII.). It now remains to follow it up with a brief history of some other industrial concerns with which I have been intimately connected and incidentally to lay stress upon the initial difficulties to contend with.

I. THE CALCUTTA POTTERY WORKS—ITS HISTORY.

The origin and history of the Calcutta Pottery Works is of peculiar interest. In the year 1901 a gentleman discovered China clay, in a place named Manglehat near Rajmahal in the Santal Parganas, suitable for manufacturing porcelain and earthenware articles. Accordingly the Maharaja of Kassimbazar, Messrs. Baikuntanath Sen and Hemendranath Sen formed themselves into a private company and, when the latter came to Calcutta and joined the High Court, the Calcutta Pottery Works was started in Calcutta as a very humble enterprise with a few huts raised on the side of a tank, where a few potters were engaged to work on the wheels.

As no pottery expert was available at that time, Mr. Sen engaged an old gentleman, Mr. Narainchandra Banerjee, who knew something about the pottery business, and who took upon himself the charge of running the new experiment. He constructed furnace after furnace and besides gallipots and bowls, he began manufacturing toys and dolls with the help of some modellers from Krishnagore. But as the said gentleman had no scientific knowledge, his experiments proved failures, and no marketable articles could be produced. A sum of Rs. 27,000/- was spent during this experimental period.

Since the chief raw material was China clay the proprietors now directed their attention to the necessary arrangements for

producing large quantities of China clay from the hills and with that object an engine, a boiler, a disintegrator and other machinery were fitted up at Manglehat. There were enormous difficulties in carrying the 20 H. P. boiler up the hill. The engine and boiler were finally set up, and after the installation of the machinery a complete arrangement was made for manufacturing a large quantity of China clay. In the beginning of 1906 Mr. S. Deb, who had been deputed to Japan, returned after receiving training in pottery manufacture in the Higher Polytechnic at Tokyo and at Kyoto, and was placed in charge of the business.

He worked for sometime but, as it was found that there was a greater prospect for the business and that the place was too small, it was decided by the proprietors that the business should be extended and porcelain articles should be manufactured on a large scale. With this end in view a lease was obtained of about three acres of land at 45 Tangra Road near Beliaghata Railway Station. On this site the necessary machinery was set up, sheds were constructed and kilns were erected and the work of manufacture under the improved scientific system commenced in 1907. But for want of trained labour the progress was not satisfactory. Mr. Deb was sent to Japan to bring with him two Japanese workmen to train the people here. These Japanese workmen arrived here in September, 1909, and worked for one year with satisfaction, after which they were sent back to Japan. The expenses of these workmen, including wages and travelling charges, cost the proprietors about Rs. 10,000. Business began to thrive gradually and the proprietors continued to invest larger sums of money.

But, owing to the influx of cheap Japanese and German articles in the market, it was found impossible to cope with the imported articles with any prospect of profit. So it was thought desirable in 1913 to send Mr. Deb to Germany to study the latest methods of manufacture of porcelain and earthenware, to purchase improved machinery and to inspect and visit

different Pottery Works in England and on the Continent. Mr. Deb worked in several Laboratories and Factories, testing the suitability of manufacturing porcelain and earthenware articles from the indigenous raw materials which he had taken with him. He came back to India after having ordered the requisite machinery and all the materials for a new and improved kiln. These were taken delivery of just before the outbreak of the Great War, and a new kiln according to German Dresden Models was constructed. All necessary machinery was installed, the land on which the Factory was situated was purchased by the proprietors, and work commenced in full swing.

A summary of productions and sales during the years 1906 to 1916 shows that production came up to Rs. 2,02,952/- while the sale was only Rs. 1,92,827/-, the amount spent by the proprietors up to that time being about Rs. 300,000/-. In the Budget which was prepared for 1916-1917, Mr. Deb, the Manager, proposed further extension and asked the proprietors for a further investment of capital for necessary expenditure and as working capital a sum of Rs. 2,50,000/-. The proprietors, however, grew despondent and after having spent such a large sum of money without any return for such a long period they did not think it advisable to spend further money and they thought of converting the business into a limited liability company. With this end in view they negotiated with a European firm and the proposal met with a quick response. The terms and conditions were discussed for a considerable time with Mr. H. N. Sen and the firm, but for some reason or other the negotiations fell through.

Then, in February 1919, the business of the Calcutta Pottery Works was converted into a limited liability company under the name and style of the "Bengal Potteries, Ltd.", with a capital of Rs. 10,00,000/-.

The new company proposed to install 3 more kilns of the Dresden type and they expressed a hope that the total working capacity of the combined kilns would be such as to produce manufactured articles to the total gross value of Rs. 4,20,000/-

annually and thus with a paid up capital of Rs. 800,000/- for the present there would be a net profit of Rs. 160,000/- per year which would enable them to declare a dividend of 20 per cent. per year.

Accordingly the company began to erect the new kilns, the slip house being extended and machinery added. But by the time all these improvements and additions were completed it was found that nothing was left for working capital. From 1920 to 1925 the company went through a terrible crisis. Managing Agents, whose activities in the industrial field of work attracted the admiration of the public, commenced dealing with the business in a style and grandeur which could be compared with some of the best European firms. Mr. Deb continued to be in sole charge of the business. He was not only in sole charge of the factory and manufacturing works, but was also entrusted with the duties of the Secretary so that the whole business was left solely in his hands. But, although he laboured hard, he could not succeed in giving it a profitable turn. The odds were against him.

Unfortunately for the company, the firm of Messrs. P. N. Dutta & Co., for various reasons, became financially embarrassed and it was thought desirable by the Directors that the Managing Agency should be taken away from them. Accordingly the Directors took upon themselves the responsibility of managing the business. Most of the original Directors having died or left the Board, new Directors were brought in.

The expenses were heavy and the monthly outturn was hardly sufficient to meet the necessary expenses, to say nothing of leaving any margin of profit. The Directors began to grow nervous as they found that it was not advisable to entrust the whole business in one hand. The Directors decided to hold an enquiry and a committee was formed to examine the whole working of the business thoroughly and after a most elaborate enquiry by the said committee a report, drawn up by the Chairman of the Committee, Mr. D. C. Banerjee, was placed

before the Directors, pointing out wherein lay the defects of the management and the errors in manufacturing.

The great difficulty in carrying on successfully an Indian manufacturing concern lies in this, that it must compete with indented articles in the market. No business can prosper on sentiment only and it is idle to expect that customers will purchase articles manufactured by Indians for any length of time simply because they are Swadeshi, at a price higher than that at which similar articles are sold in the market. So, an Indian manufacturer has to sell his articles at the market rate irrespective of his cost of production. If he is compelled to sell at the market rate he may have to carry on his business at a loss. He is placed in this dilemma as long as he is unable to manufacture articles at a minimum cost which will enable him to sell at a profit. The Indian manufacturer has to create a market for himself, suffering loss year after year, and this is a matter which the shareholders will have to bear in mind. No doubt the shareholders cannot be blamed if they find that their invested money is lying idle without any return for years ; but they ought to take into consideration that India is now in its infancy as regards industrial movements and she cannot be expected to do at once what the foreign countries have achieved after centuries. This is the reason why a large number of Indian concerns, which had cropped up since the Great War, have collapsed and few are those yet struggling ; still fewer are those that seem likely to survive that struggle. Extensive capital is being invested by foreign manufacturers and necessarily their cost of production is a minimum one. At present India is undergoing these trials and, unless the local manufacturers can bring their cost of production to such a minimum scale as will leave them a sufficient margin of profit, they cannot be expected to survive and compete with foreign manufacturers.

The account given above is taken verbatim and is condensed from Mr. Sen's own report. A pathetic interest

attaches to it as the writer of it is no longer in the land of the living. At my special request Sen drew it up a few months before his death.

It will thus be seen that the late Maharaja of Kassimbazar and Hemendranath Sen have nursed this infant industry for nearly 30 years. The Maharaja and Messrs. B. N. Sen and H. N. Sen represent more than 50 per cent of the share capital of the concern.

I am sometimes pestered with inquiries from the shareholders of this Company, and some others with which I happen to be connected, for failure in paying dividends.¹ But the account given above will convince the reader of the immense and almost insuperable difficulties in the path of the pioneers. The best and the most convincing reply can, however, be given by what the *National Government of Japan* has done to start and foster infant industries.

"It is the State, also, which has been mainly responsible for the introduction of new industries into Japan * * * where it has not actually provided the capital for new enterprise, it has frequently helped by granting subsidies or protection

¹A big shareholder, however, (to the extent of Rs. 80,000)—an Englishman—thus writes to a member of the Board: "L.—has been kind enough to write and tell me of some of the troubles you all have had in connection with the firm and with what determination you are facing them. We, shareholders, at a distance, should be very grateful for what you are doing and I for one anyhow wish to thank you very sincerely for your efforts and also to say that my confidence in your ultimate success is absolutely unshaken. * * * * Fortunate we are that we have *you*. He says of you—'There is no man for whose intellect and purpose I have a greater admiration'. Very well—it will certainly be an extraordinary thing if you can't make good"

The English shareholder, referred to above, since his retirement from Government service, has been giving his undivided attention to the successful working of the business. Though a layman he has mastered the details and to a certain extent even the *technique* of the industry. He has been working for the last year and a half regularly from 10 A.M. to 6 P.M. without any remuneration whatever. His one *idea* is to make the Pottery Works a success. Such selfless devotion on the part of a shareholder is indeed rare and an example unto others.

to the manufacturer, besides providing him with loans from the official banks".—Allen: *Modern Japan and its Problems*, p. 103.

It must not be forgotten, however, that the Japanese industrial and commercial enterprises were, roughly speaking, undertaken by the State from 1870 to 1883. During this period the Government owned the main factories in Japan and worked them, owing to the lack of experience of the people in regard to modern methods of business management. In order to educate the people in technical and other knowledge the Government had to establish and supervise these factories. For instance, the Government owned railways, coal and other mines, shipbuilding yards, textile factories, including silk, cotton, wool-spinning and weaving mills, and also factories for the manufacture of glass and paper.

"During the thirteen years following the Meiji Restoration; that is, the first half of the period (1868—1893), the industries of Japan may be said to have been in the age of industrial infancy under State management. About 1883 the industries under State management were gradually handed over to private enterprise, which was at the time subsidized by the State for the purpose of encouraging staple industries; thus the policy of State management was replaced by private enterprise.
* * * * * The period of self-controlled industries ends with the Japanese-Chinese War, 1894, which was followed by preparations for future industrial development.—Uyehara: *Industry and trade of Japan*, pp. 10-11.

"Almost all Governments have attempted to stimulate industrial development by the granting of subsidies, by the imposition of protective tariffs, or by loans from official banking institutions. Everywhere free competition has been gradually giving place to governmental regulation, to co-operation among producers, and to organized control. Even Great Britain, in spite of her traditional bias towards *laissez-faire*, has been compelled by the pressure of circumstances to make some advance along these new paths".—Allen: *op. cit.*, p. 105 ;

also : "Ito [Prince] bent himself to forced cultivation of industry by Government patronage."

The death of Maharaja Manindra Chandra Nundy close upon that of Hemendranath Sen has been another severe blow to the concern. That it is at all able to keep its head erect in spite of the adverse circumstances and heavy losses is due mainly to the heroic endeavours and sacrifices of Mr. Durga Charan Bannerji. Since he joined the Directorate seven years ago, he has been ungrudgingly giving his time to rescuing it. Mr. Bannerji is a partner of a successful firm of attorneys and if he likes he can coin his minutes into rupees and hours into gold mohurs, and yet almost every day after arduous professional work he devotes an hour or sometimes a couple of hours to the affairs of the firm. On holidays he has been known to go thoroughly into the accounts and all the details of the business. Though a first class M.A. in History, he has read the available literature on ceramics and has grasped the technique of the subject in frequent consultations with the factory experts. I have often seen him in harness for 12 hours on end with but short intervals for meals. He has not, on occasions, even hesitated to stake his personal credit for the purpose of raising loans to tide over financial crises.

The one idea uppermost in his mind and which has all along sustained him is that he has been serving a Swadeshi enterprise. Unstintedly does he give his best to the cause which is near and dear to his heart. I feel considerable delicacy in having to write this, for I know Mr. Bannerji is very shy of the public gaze and is a silent and unobtrusive toiler in the field. I am not at liberty to divulge the secrets of his private life but this much I may say that he has on a rough calculation staked and lost some 4 or 5 lakhs on behalf of Swadeshi concerns and he is not at all sorry for it. I must not omit this opportunity of paying my meed of tribute to another friend, a colleague of mine in the Directorate of another Company. Though on the border-land of three-scores and ten and by no means a well-to-do man and even encumbered with family

obligations, he has nearly beggared himself by advancing his hard-earned savings to the extent of 40 thousand rupees to keep his Company going, knowing well that the money is not likely to return to his pocket.

II. BENGAL ENAMEL WORKS LTD.

The Bengal Enamel Works Ltd. was started in 1921 with a small Factory at Narkeldanga. The beginning was attended with considerable difficulties owing to the lack of proper experience and technical knowledge of the industry. The Bengali gentleman who was originally asked to take charge of the Works, could not see his way to accept the condition insisted on by the promoters of the concern, that he should train up under him a few Indian Science Graduates with a view to future expansion of the business. He left the concern at a critical moment and just at that time the prospects of carrying the project through seemed gloomy.

But one of the Directors, Mr. Dwijendra Nath Bhattacharyya, Professor of English Literature at a local college, threw himself into the business heart and soul and, undaunted by the difficulties that stood in his way, went on making experiment after experiment with the help of technical books on the subject ordered out from England, Germany and America. Thanks to his indefatigable labour, it was found possible to commence business in November, 1921, with a very small furnace suitable for manufacturing house numbers and similar other small enamelled articles.

Meanwhile, his brother, Devendra Nath Bhattacharyya, M. Sc. (an ex-pupil of mine) who was in Japan at the time, devoted himself to the study of the Enamel Industry there and began to contribute material assistance to the experiments conducted by his brother in India, by valuable hints and suggestions based on his personal observations in some of the best enamel factories of Japan.

Subsequently, Mr. Devendra Nath Bhattacharyya purchased in Japan machinery and complete equipment for an up-to-date

enamel factory and brought them to Calcutta in 1923. A spacious plot of land was purchased at Palta (15½ miles from Calcutta) and a suitable factory established on modern lines under the direct supervision of Devendra Nath Bhattacharyya. The devotion and energy of the Bhattacharyya brothers, and specially of Devendra Nath, who almost shattered his health under the great strain, deserve special mention.

The magnitude of the task can only be realised by those who are connected with industries in Bengal. Col. Dunlop, the then Director of Army Contracts, Simla, who visited the Factory in 1927, expressed his surprise in no ambiguous language to see the progress made in 5 years' time with such a difficult and entirely new industry in India.

As a result of thousands of experiments with Indian raw materials, it became possible to make most of the enamel glazes locally and the Factory was able to produce articles of a quality comparing favourably with British goods.

Meanwhile, the number of trained workmen had increased slowly, but steadily, attended with a corresponding increase in the annual output. In place of the small furnace the factory now owns four big Muffle Furnaces, besides a battery of smelting furnaces to prepare enamel glazes.

The difficulty experienced in inducing Bengali youths to adopt and stick to the arduous task of enamellers was considerable. The high temperature in which one has to work in the Furnace room proved a deterrent to the middle-class Bengali lads and hundreds of them came and went away through inability to become fully inured to the conditions. Eventually men had to be recruited from among the hardy Mahommedans of Noakhali and the so-called lower class Hindus of Eastern Bengal, with a sprinkling of upper-class Hindu lads without any literary education. The educated Bengali youth has shown a great apathy towards undergoing hardship and manual labour of this nature, and efforts to train a few of our University men for this work have so far proved a failure. In every case the ceaseless refrain of the sad story is the same, namely, the

easy-going nature of the Bengali youth and his repugnance for hard labour. Attempts are still being made however to induce educated Bengali youths with sufficient stamina and tenacity to join the industry, as it is felt that on it depends, to a large measure, the future of the enamel Industry in the country.

It may be added here that even in industrial England enamelled iron ware enjoys a protective duty of 25 per cent., whereas this infant industry in India has to stand keen competition against formidable Japanese and German manufactures without any kind of State or Bank assistance whatsoever.²

Of course, big concerns like Tata Iron Works or the Titagarh Paper Mills etc., can afford to raise a hue and cry, make their voices heard and get heavy protective duties imposed, but small industrial undertakings must suffer in silence and be wiped out of existence. This is indeed a striking evidence of the solicitude felt by our paternal Government for the industrial development of the country it professes to hold in trust!

III. MERCANTILE MARINE IN BENGAL—PAST AND PRESENT.

The Bengali is now believed to have an instinctive aversion to mercantile enterprises, and to sea-voyages. But historical records are available to prove that he bore a conspicuous part in the external and internal trade of the land of his birth.

“The tradition of Bengalis being once famous for their maritime enterprises and commercial activities has also been,

2 Cf. British Official Wireless.

Rugby, June 9, 1929.

“The House of Commons yesterday passed a resolution imposing a safe-guarding duty of 25 per cent. for five years on enamelled ironware.”

“Sir Philip Cunliffe-Lister, President of the Board of Trade, recalled that the original duty had been imposed in 1922 by Mr. Lloyd George’s Government. When it lapsed in 1924 foreign imports had increased, but not to such an extent as to persuade the Safe-guarding Committee in 1926 to advise the re-imposition of the duty. The present claim before the identical committee had now succeeded, because new evidence, including statistics of the census of production, had been adduced,

as may be naturally expected, well preserved in their literature. No folk-lore is so popular in Bengal as those volumes of poetry evoked by devotion to the goddesses of Chandi and Manasa ; and in them are contained accounts of the maritime adventures of merchants like Dhanapati, Sreemanta and Chandsadagara.”³

Thus as early as A. D. 399-414, the Chinese pilgrim Fa-hian found Tamralipta, as the great harbour of the Bengal Sea-board and he sailed from this port on his return voyage. As Mr. Okakura also says that down to the days of the Mahommedan conquest the intrepid mariners of the Bengal coast were founding their colonies in Ceylon, Java and Sumatra and binding Cathay (China) and India fast in mutual intercourse. During the period under the patronage of the twelve Bhowmicks (Semi-independent chiefs of Bengal) and of the Moghol Viceroy at Dacca, the chief centres of Hindu naval activity in Bengal were Sripur, Bakla or Chandradwipa, in the south-east of the modern district Backergunge and Chandikan, which is identified with the Saugor Island. Kedar Ray, the lord of Sripur, was a naval genius in his day, and defeated completely the fleet of the King of Arakan containing 150 vessels of war, when the latter attempted to conquer Sandipa. Bakla grew to another centre of activity under the leadership of Ramchandra Ray and his son Kirtinarayana, who ousted the Firinghees from their Settlements near the mouths of the Meghna. But by far the most important seat of Hindu maritime power was that

showing that six out of 18 firms in this country had been compelled to close down.”

It is true that enamel ware is subject to an import duty of 15% ; but this protection is almost counterbalanced by the fact that all the imported chemicals used by this industry are also subject to the above duty, and Tata's Steel sheets, which are the most important raw materials used, naturally maintain the same level of price in the market as the duty-paid imported steel sheets.

³ Vide—Radhakumud Mukherjea—*Indian Shipping*, pp. 157-58.

established at Chandikan by Pratapaditya, the famous ruler of Jessore, and his son Udayaditya.⁴

The Mahommedan rulers had also strong navies for conducting warfare. Thus, Mirjumla embarked on his conquest of Assam with a large, Nouwara (Flotilla). In 1664 Shaistha Khan became the Viceroy of Bengal with his Capital at Dacca. In order to suppress the Mughls, he built up a large navy, consisting of 300 magnificent vessels of war which were constructed at Hughli, Balasore, Murang, Chilmari, Jessore and Kalibari.

The East India Company also helped to build up the Bengal marine in its early days, thus continuing the work of the Moghol Viceroys of Dacca. "From 1781 to 1800, 385 ships with a total tonnage of 17,020 were built on the Hughli. From 1801 to 1821, there were built on the Hughli 237 ships of 105,693 tons." "Lord Wellesley, the Governor-General of India, was able in 1800 to testify as follows to the growth and possibilities of Calcutta as a shipping centre."

"The port of Calcutta contains about 10,000 tons of shipping, built in India, of a description calculated for the conveyance of the cargoes. From the quantity of private tonnage now at command in the port of Calcutta, from the state of perfection which the art of ship-building has already attained in Bengal (promising a still more rapid progress) it is certain that this port will always be able to furnish tonnage to whatever extent may be required for conveying to the port of London the trade of the private British merchants in Bengal."

Bombay was also not behind Bengal in this respect. If anything she was in advance of Bengal. The Bombay Government Dockyard, under the able guidance of Parsi ship-builders, was the best of its kind known at the time. Thus a visitor describing Bombay in 1775 said, "Here is a dockyard, large and well contrived with all kinds of naval stores deposited in proper warehouses. It boasts of a dry dock as is perhaps not to be

⁴ For an account of the great naval engagement between Udayaditya and the Mogul General—see *Hist. Jessore-Khulna*.

seen in any part of Europe either in size or convenient situation.”⁵

But this rich promise of progress foreshadowed by Wellesley never materialised. “The arrival in the port of London of Indian produce in Indian built ships, created a sensation among the monopolists, which would not have been exceeded if a hostile fleet had appeared on the Thames. The ship-builders of the Port of London took the lead in raising the cry of alarm ; they declared that their business was on the point of ruin and that the families of all the shipwrights in England were certain to be reduced to starvation” (Taylor : *History of India*). This agitation effectively put a stop to Lord Wellesley’s just and humane policy of encouraging Indian ship-building by obtaining admission of Indian ships and their cargoes into the ports of England on terms approaching, in some degree, to reciprocity. The Court of Directors and Proprietors recorded severe resolutions of censure on their Governor-General for this humane action.

In our own times, we find that whenever an attempt has

⁵ The under-mentioned Parsis held successively the appointment of head builders in the Bombay Government Dockyard from 1736 up to 1837 :—

From 1736 to 1774 * * * Lowjee; from 1774 to 1783 * * * Maneekjee and Bomenjee; from 1783 to 1805 * * * Framjee and Jamsetjee; from 1805 to 1811 * * * Jamsetjee and Ruttonjee; from 1811 to 1821 * * Jamsetjee and Nowrojee; from 1821 to 1837 * * * Nowrojee and Cursetjee.

Recently, Dr. Paranjpye on the occasion of the launching of the Scindia Navigation Company’s steamer “Jalaveera” said : “on an occasion like this, it is impossible not to recall past times when India was famous for her maritime industry. Forgotten as those days are it is hardly a hundred years since many places in India could build ships even better than in the shipyards in England. Thus we are told in 1802 the Admiralty ordered ‘Men-of-War’ for the Government’s Navy to be built in Bombay. They intended to send out European builders but the merits of Jamsedji Wadia, a local shipbuilder, being well-known, their Lordships ordered him to continue as master-builder. The famous house of Wadias had a very interesting history in ship-building for a hundred years. It was only about the middle of the 19th century that Bombay ceased to be the centre of a flourishing ship-building industry.”

been made to start a Swadeshi Steamer Line whether in Bengal or in Bombay, the powerful British Companies, enjoying a monopoly of the traffic, have tried their best to strangle the national line at its birth. I cannot better describe this attitude than by quoting the following extracts from the evidence before the Indian Mercantile Marine Committee given by Mr. Jogendranath Ray, representing the East Bengal River Steamer Service, Ltd., of Calcutta. "It was neither want of capital nor lack of efficient management that retarded the growth of his Company, but the undue combination of European interests with the avowed object of crushing this Indian Enterprise. When this Company was first started as a private concern, most of the Jute Mills used to accept goods carried on the small vessels of this Company and to advance money on the bills of lading of goods shipped by the Company's vessels. But after a few years, when the European Companies found that this Indian Company was increasing its flats and doing very good business, and other similar Companies were being started by Indians, they made an agreement with the mills restraining them from accepting jute carried on vessels owned and managed by Indians".

The experience of the Scindia Steam Navigation Co., which has a large fleet engaged in Coastal traffic, has been much worse. The speech delivered by Mr. Walchand Hirachand, Chairman of this Company on the 25th November, 1929 is illuminating. "The foreign companies have employed tonnage in the routes in which the vessels of this company ply, much in excess of the requirement of the trade. This coupled with unreasonable and un-economic freights tells heavily upon the Indian Companies struggling for existence". The attitude of the Government of India under the Crown has been deliberately hostile to Indian shipping, thus Mr. Hirachand says: "Not only did the commercial ship-building yards disappear one by one, but active steps were taken by Government to do all it could to prevent building of ships in India, even for its own requirements, and, as a result, the Bombay Dock-

yard was closed down after rendering immense service both to England and India during the many years that it lasted. With its dismantling was completed the process of de-vitalising the shipping industries of India undertaken ever since the appearance in London of Indian-built vessels which evoked the jealousy of the ship-builders of England.

"Thus in the course of less than fifty years the national tradition of Indian ship-building and maritime activities extending over thousands of years was blotted out so that hardly anything now remains to show the immense sway which at one time the Indian shipping industries exercised over the commercial ocean routes of the world. Throughout the awful pages of Indian economic history of the last 70 years, there is hardly a more typical example of the British insistence upon Indian economic ruin to benefit British interest than their Government's systematic destruction of Indian shipping enterprise and their helpful support to the consolidation of British influence in the coastal waters of India. The exclusion of British Shipping Companies from the income tax and consideration of measures to enable them to monopolise the coasting trade of India, coupled with their hostility to Indian shipping in general, are enough to stamp the British economic policy with an open desire to harm Indian interests and to pursue a definite policy of strengthening British interests".

The Indian Mercantile Marine Committee appointed by Government, under pressure of the resolution passed by the Legislative Assembly, recommended "The eventual reservation of the Indian coasting trade for ships, the ownership and controlling interest in which are predominantly Indian." But the bureaucracy, who are the official collaborators with British commercial exploiters, have been doing their best to thwart this recommendation, and the fate of Mr. Haji's coastal traffic bill still hangs in the balance.

Contrast this tragic picture with what has been done by the national Government of Japan! In an incredibly short time, that country has not only built up a mercantile marine

but has come to the forefront in naval supremacy. The key to this pre-eminent success lies in the initiative of the State and its never-failing help in the shape of subsidy and banking facilities. When Commodore Perry appeared before Japan in 1855 she was taken aback and was not at all prepared for the new peril with which she was threatened. "For more than 200 years, the policy of national seclusion, enforced by the *shoguns*, stifled all maritime enterprise". At the commencement of the Renaissance, however, the Elder Statesmen realised the necessity of building an up-to-date mercantile marine and also a navy, and they strained every nerve to that end.

Thus Allen in *Modern Japan and its Problems* writes :— "By that time (*i.e.* 1872) the technical and commercial institutions and the present system of technological education had been brought into existence by the Government ; a beginning had been made of a mercantile marine and, encouraged and supported by the state, there had appeared those great trading companies which to-day are such significant figures in the country's foreign trade. By 1894, the chief manufacturing industries introduced officially into Japan had been the textile and ship-building industries".

Later on the policies of protective tariff and subsidies were adopted to encourage private initiatives, and then successful industrial and manufacturing concerns started by the state were handed over to private management. "Although the Government relaxed its control over certain industries, it did not leave them to fight out their destinies without official assistance. Having secured tariff autonomy in 1899, Japan began to build up tariff walls round those industries which were considered of major importance, while the policy of subsidizing her shipping lines and ship-building yards came into effect in 1896 and, though revised in 1910, has remained in force ever since". And during the late war "the world shortage of shipping led to an expansion of Japan's mercantile marine so that from being a country whose foreign trade, some twenty years before, had been carried largely in foreign ships, she came herself to play

an active part in the commerce of all the Pacific countries''. Only some fifty years ago small junks and sailing vessels were the only productions of Japanese shipyards; there has been amazing progress since then, and to-day we find that first class ocean boats and even dread-naughts and battle cruisers are being built by the Japanese themselves in their shipyards.⁶ Although Japan labours under a serious natural handicap, in that her iron-ore and coal are of inferior grade, she imports 'pig' iron from America and India (Tata's) and from Indian Iron and Steel Company, Asansol, and makes her own steel for her ships. In this respect, although India is far more favourably situated, her misfortune is that her own interests clash with those of her foreign masters and hence they must be sacrificed.

Let us now see what steps America has been taking to make up for lost time, though compared to Japan she is one of the most progressive of modern nations. The following account from the pen of Sir Archibald Hurd will prove highly interesting :

"Though the American Congress has not yet approved the scheme for building the ten new cruisers for which the Navy Department at Washington has asked, it has passed a measure which is intended to restore American shipping to the position which it once held on the seas. The principal provisions of the new act are as follows":—

"It provides a construction fund of \$250,000,000 so that

⁶ Uyehara : *Industry and Trade of Japan*, p. 224. The following extracts will throw further light on this subject :—

"Few private concerns were established, and the work actually carried on by the Government upto 1880. During this period the number of home-built vessels gradually increased, but the average tonnage of steam vessels in 1880 hardly exceeded 80 tons. * * * * The Government handed over the management of the Nagasaki Shipyard to the Mitsubishi Co., in 1884, and the Kobe Shipyard to the Kawasaki Co. in 1885, both of which had been under Government control since their establishment. At the same time, the other two Government Shipyards, viz., Uraga and Ishikawa, changed hands, and ship-building in Japan, which had been entirely under State management before 1880, was undertaken by private enterprise from that year."—*ibid*, pp. 224-26.

the Shipping Board may make loans to private shipowners up to three fourths of the cost of a vessel at interest rate apportioned in accordance with lowest rate of yield of any Government obligation (except postal savings stamps) outstanding at the time the loan is made. The loan period will be 20 years, including loans for 75 per cent. of the cost of reconditioning, remodelling or equipping vessels already built”.

“Government officials are required to use American vessels when on Government business in preference to foreign ships”.

It is obvious that American ship-builders will profit by the new law, because owners will not lose the opportunity of building cheap ships since they can now obtain money at something less than the ordinary rates which rule in the United States. It has been stated that within the next ten years as much as \$5000,000,000 will be devoted to the expansion of the American Merchant fleet.

In this connection it is interesting to hear what Mr. V. J. Patel on the occasion of launching a new steamer of the Scindia Steam Navigation Company has to say :

“There was, as you are aware, a time when first-rate vessels built, owned, manned and managed by Indians used to carry the rich products of India to distant lands. A combination of circumstances, however, too well-known to need mention at this juncture, killed that industry outright, and subsequently made it extremely difficult for Indians to revive their past glory of a mercantile marine. It is again interesting to note that several Indian Shipping Companies were started during the last fifty years in India : but they were all wiped out of existence, about which the less said the better”.

Mr. Patel proceeded to trace the history of the Scindia Navigation Company, and the severe rate-war launched against it. “The Company undertook a programme of constructing six modern cargo steamers ; but that programme had to be curtailed. The Trade Facilities Committee rejected their application for a guarantee to enable the company to place orders for building steamers. It must indeed be a very painful

thought for those who wished to see a better understanding established between England and India that, although the Trade Facilities Committee could find out of their £21 millions more than 2¼ millions for assisting foreign shipping companies, it could not spare even less than one fourth of a million for a shipping company of that part of the Empire which stood so firmly, and responded so generously, to enable it to win the Great War."

* * * * *

"Whilst the Government of almost all the maritime countries have helped and are helping their nationals to build up their own mercantile marines, are not Indians entitled to expect their Government to help them in this great industry? No wonder then that there is a keen feeling of disappointment when they find even the most modest recommendations made by the Mercantile Marine Committee, appointed by the Government of India themselves, to keep open the coasting trade of India only to the vessels owned and managed by Indians, just as the coasting trade of most of the maritime countries is reserved to their own nationals, have not yet been carried out. I shall say nothing here of the large overseas trade of India in which Indian shipping hardly participates".

"The annual freight bill, which India meets, comes to 35 or 40 million pounds, a very substantial portion of which is claimed by non-Indian shipping companies. It is therefore a most legitimate and natural desire on the part of Indians to retain as much as possible of this great freight bill in their own country and thus help to lessen, to however small an extent, the poverty of their economic life".

The following extract from *The Mussalman* (dated October 21, 1928) will throw further light on a similar though much smaller undertaking in Bengal:

"It will be remembered that when Mr. S. N. Haji's Coastal Reservation Bill was being discussed in the Legislative Assembly, the Bengal Mahomedan Association of Rangoon wired its support to the Bill and, while emphasizing the need

for such a measure, quoted an instance of how the foreign shipping companies had started a rate-war against the newly started indigenous Company, namely, the Bengal-Burma Steam Navigation Co. Ltd., the ships of which have been plying between Chittagong and Rangoon. How unfair foreign competition ultimately led to the failure of the Bengal Steam Navigation Co. Ltd., which was started in the heyday of the Swadeshi movement of 1905 and 1906, is now a matter of common knowledge. The reservation of Indian coastal traffic for Indian owned ships has now become an indispensable necessity. Our readers are already aware that the foreign companies that have entered into a competition with the Bengal-Burma Steam Navigation Co. have gradually reduced the passenger fare between Chittagong and Rangoon from Rs. 14 to Rs. 4 and we understand that, in order to crush the infant indigenous concern, they threaten to do away with passenger fare altogether and make the passage free. Moreover, one of the foreign companies has just begun unfair competition with Moulvi Abdool Baree Chowdry, the chief promoter of the Bengal-Burma Steam Navigation Co., by running launches for inland services in rivers where launches owned by Mr. Chowdry have been carrying on the traffic so long. The underlying idea seems to be that if the man at the helm of the affairs of the Bengal-Burma Steam Navigation Co. may somehow or other be injured or ruined then the failure of the new Company may be brought about more or less easily."

I have myself been intimately connected with another inland Steam Navigation Company, which is, however, a very humble enterprise. The difficulties in our path have been of exactly similar nature. During the last twenty-two years of its existence the Company has suffered a loss to the extent of some 2 lakhs of rupees. The fare from one terminus to another was one rupee, but a powerful rival British Company began to ply its own steamers in competition with ours and reduced the fare to *one anna* and began running their boats alongside ours. But for the heroic and patriotic resolve of two

or three of the Directors who gladly undertook to bear the loss, the Company would have long ceased to exist.

It has been calculated that during the last 25 years, more than 20 Indian Shipping Companies, with a capital aggregating more than 10 crores, have tried to establish themselves on the Indian coast ; and most, if not all of them, have failed owing to the rate-cutting policy adopted by the British concerns.

The British government, it will thus be seen, has done everything in its power to ruin the indigenous enterprises. The following few extracts will throw additional light on the subject :—

“ But the greatest crime in the eyes of the Court, was Lord Wellesley’s encouragement of private Indian trade, by means of which, in India-built ships, he was creating a noble mercantile navy, with corresponding increase of trade. The company, under their narrow views of monopoly, could not follow the magnificent plans of their Governor-General : and though he was supported by the ministry of the crown, the Court of Directors and Proprietors recorded severe resolutions of censure”.—Meadows Taylor : *History of India*.

“The ‘British India’ developed the coasting trade, but the P. & O., being ocean mail contractors, had, on the opening of the Canal, to face the question of passing their steamers through it into European waters. I think I am correct in saying that the Directors in Leadenhall Street in these circumstances decided that their ships should henceforth be manned by Europeans, the lascars being confined to vessels trading from India to China, and in the local service between China and Japan. But the change proved disastrous, because the old Adam in the Britisher, his insubordination, and his tendency to drunkenness, asserted itself, and caused the new arrangements to collapse. * * * *

After a year’s experience the experiment was given up”.—*The Imperial & Asiatic Quarterly Review and Oriental & Colonial Record*, third series—vol. xxx. pp. 59 & 60, July—Oct. 1910.

INDIGENOUS SHIP-BUILDING.

A Peep into Measures taken by Government a Century Ago.

"To the Editor, *Forward*,⁷

Sir,

It is said that the boat building industry of our country has been destroyed due to the Foreign Government.

In this connection the following notification published in the "Calcutta Gazette" (Supplementary) of the 29th January 1789, may be interesting to the public. In this notification, it is not however, stated why the construction and repair of several kinds of boats were restricted.

"Fort William,

Revenue Department, Jan. 14, 1789.

"Notice is hereby given that all persons whosoever (the Magistrates of districts excepted) are prohibited from making use of, or constructing boats of the following denominations and dimensions after 1st March next.

"Luckhas 40 to 90 covids length $2\frac{1}{2}$ to 4 covids breadth.

"Jelkias 30 to 70 covids length $3\frac{1}{2}$ to 5 covids breadth.

Paunchways of Chandpore carrying more than 10 oars.

"That the Magistrates of Jessore, Dacca, Jalalpore, Mymensingh, Chittagong, the 24-Perganas, Higelee, Tumlook, Burdwan and Nuddea have been directed to seize and confiscate all boats of the above descriptions which may be found within the limits of their respective jurisdiction after period above mentioned.

"That any Zemindar allowing any boats of the foregoing descriptions to be built or repaired within the limits of his Zemindary (unless by a written order of the Magistrate of the district) shall forfeit to Government the village in which such boats shall be proved to have been so built or repaired.

"That any carpenter, blacksmith or other artificer engaging for or employed in the building or repairing of boats of the descriptions above specified (unless by the express permission of the Magistrate of the district) shall be committed to close

⁷ Dated 26-9-28, Dak Edition.

imprisonment in the 'foujdary' jail for any period not above one month, or suffer corporal punishment not exceeding 20 strokes with a rattan.

"Published by order of the Governor-General-in-Council.
This Government notification speaks for itself.

Yours etc.,

A READER."

One can scarcely make up his mind to believe in such a blood-curdling *ukase* ; but facts are facts. In its refined and ruthless cruelty, it is perhaps unsurpassed in the annals of civilized governments.

The moral is clear. Until "the unholy alliance between the British administrators and British exploiters of India is broken up, until there is a change in the outlook of the Government of India, which would refuse to pursue a policy of active harm to India under dictation of British authorities, there is no hope for revival of Indian Mercantile Marine."—Abdul Baree Chowdry.

Besides the keen foreign competition and unsympathetic attitude of the alien rule another reason of the failure of our indigenous industries lies in the unhealthy competition amongst ourselves. It has been my unfortunate experience that whenever a new enterprise is started and even while it is struggling hard against many odds it has also to fight against the mushroom growth of many rival enterprises thoughtlessly started by our own countrymen. As a result rate-cutting becomes then a very prominent feature. For instance, our *Bangiya Steam Navigation Company* has suffered heavy losses from any number of motor-launches, and latterly one steamship plying side by side, although there are scores of other navigable rivers where they might have been profitably run. These latter have all ended disastrously causing at the same time heavy losses to our own line as well. It is the eternal curse that for the sad lack of initiative, "versatility and adaptability"—as Jack has it (*Vide* Chap. XXVI)—the Bengali cannot but follow the beaten track and thus *the Bengali has often unconsciously become the worst enemy of the Bengali.*

CHAPTER XXI.

GOSPEL OF CHARKA—LAMENT OF A SPINNER.

During the last ten years I have worked hard for the propaganda of the Charka or the spinning wheel. Many have expressed surprise at what they regard as my new infatuation. The message of Mahatma Gandhi was driven home to me shortly after it was delivered. Being an industrialist on a humble scale, at first I scoffed at the very idea of this primitive, uncouth instrument competing with machinery. But mature deliberation soon convinced me of the efficacy of spinning in every rural household during the odd hours of unemployment. It is the only subsidiary occupation possible to the teeming millions of India, who live from hand to mouth and are often on the verge of starvation. The Charka has very aptly been called "the poor man's insurance against famine". As one who had to take an active part during the relief operations in connection with the Khulna famine and the North Bengal Flood, I could not fail to notice what an immense boon the Charka would have proved to the starving people if it had not been abandoned nearly a century before. In order to make this point clear the writings of a few eminent, far-seeing, noble-minded Englishmen, who had evidently anticipated Mahatma Gandhi, will be very helpful. The place of honour should be assigned to Colebrooke.

Three-quarters of a century before the birth of Mahatma Gandhi, a great Indian administrator, but greater still as an Orientalist, pleaded hard on behalf of the Charka. No single Englishman has done more for the cause of Sanskrit scholarship than Henry Thomas Colebrooke. Among other things it was he who was chiefly instrumental in first bringing to the notice of the European world the sublime beauties of the 'Vedanta'; it was he who again for the first time presented to the occidental scholar a masterly exposition of the six systems of Hindu

Philosophy. It was he again who in a series of admirable contributions established the priority of the Hindus in Arithmetic and Algebra. Colebrooke came out to India as a writer in the East India Company's service when merely a lad of some 18 summers. By his indomitable zeal and perseverance he acquired a mastery over Sanskrit rarely equalled since then. As a Civil Servant he travelled over the length and breadth of Bengal shortly after the permanent settlement of Lord Cornwallis and thus acquired firsthand acquaintance with the condition of the tillers of the soil and his booklet—*Husbandry of Bengal*—published about 1800 A.D., is replete with valuable information.

Speaking of Charka as the poor man's standby he observes :—"To a government enlightened as that is, by which British India is administered, it cannot be a trifling consideration to provide employment for the poorest classes. No public provision now exists in these provinces to relieve the wants of the poor and helpless. The only employment, in which widows and female orphans, incapacitated for field labour, by sickness or by their rank, can earn a subsistence, is by spinning and it is the only employment to which the females of a family can apply themselves to maintain the men, if these be disqualified for labour by infirmity or by any other cause. To all it is a resource, which, even though it may not be absolutely necessary for their subsistence, contributes at least to relieve the distresses of the poor. Their distresses are certainly greater than among the many decayed families which once enjoyed the comforts of life. These are numerous in India ; and, whether they be entitled to the particular consideration of Government or not, they have certainly a claim on its humanity.

"In this view, it appears essential to encourage an occupation which is the sole resource of the helpless poor. That such encouragement would supply commercial advantages to England, we think, can be also proved. For this purpose, it might be shown that cotton-yarn could be imported into England from Bengal cheaper than cotton-wool. Large quantities of linen and

woollen yarn are admitted, duty free, from Ireland. If it be not considered as injurious to the manufacturing interest of Great Britain to permit the importation of linen and woollen yarn, why discourage that of cotton-yarn from Bengal by a heavy duty, besides all the other impediments which we have so often occasion to notice?"

No commentary of mine is needed to improve upon the above. Let me now quote a few statistics from Buchanan Hamilton's work about the economic condition of Northern India from 1808-1815:—

"Spinning and weaving were the great national industry of India next after agriculture. All the spinners were women, and Dr. Buchanan estimates their number in this district (*i.e.* Patna city and Behar District) at 330, 426. By far the greater part of these spin only a few hours in the afternoon, and upon the average estimate the whole value of the thread that each spins in a year is worth nearly 7 rupees, 2 annas, 8 pies, giving for the total annual value Rs. 23,67,277, and by a similar calculation the raw material at the retail price will amount to Rs. 1,286,272 leaving a profit of Rs. 1,081,005 for the spinners, or Rs. 3¼ (6s. 6d. in the year) for each. * * * As the demand therefore, for fine goods has for some years been constantly diminishing, women have suffered very much.

"Spinning and weaving were the great national industries of Shahabad ; 159,500 women are employed in spinning and produced thread to the value of Rs. 1,250,000 a year."¹

Spinning and weaving naturally went hand in hand. Thus of Purnea district we read : "Weavers of cotton were numerous, and were mostly employed in producing coarse goods for country use. Three thousand five hundred looms employed in finer work produced Rs. 506,000 worth of goods, and brought a net profit

1 Cf. "All the thread is spun by women, who generally employ their leisure hours in the business".—Taylor : *Topography of Dacca*, p. 167.

"Indian Muslins were first introduced into England in 1666".—*op. cit.* p. 97. It is necessary to remember that 12½ lakhs in 1808 represents fully 50 lakhs to-day.

of Rs. 149,000 or about 86s. annually for each loom. Ten thousand looms employed on coarse goods produced cloths to the value of Rs. 1,089,500 and brought a net profit of Rs. 324,000 or about 65s. annually for each loom.

Romesh Dutt from whose *Economic History of India* some of the above extracts have been taken thus concludes his summary: "Large portions of the Indian population were engaged in various industries down to the first decade of the nineteenth century. Weaving was still the national industry of the people. Millions of women eked out the family income by their earnings from spinning".

H. H. Wilson in his continuation of Mill's *History of British India* (vol. i, p. 538, foot-note) with his glowing indignation narrates the destruction of Indian textile industry in these eloquent terms:—

"It is also a melancholy instance of the wrong done to India by the country on which she has become dependent. It

"The Empress Noor Jehan greatly encouraged the manufactures of the country, and under her patronage the Dacca Muslins acquired great celebrity. * * * * Throughout succeeding times the Dacca Muslins have maintained their high reputation, and even in the present day, notwithstanding the great perfection which the art of weaving has attained in Britain, these fabrics are unrivalled, and in point of transparency, beauty and delicacy of texture are allowed to excel the most finished productions of the loom in any country in the world.—*op. cit.*, pp. 163-64.

"The spinning of thread afforded employment to all ranks and classes of inhabitants of the district in former times. This branch of industry began to be affected in 1824, when British yarn was first imported into the district, and since 1828 it has been in a rapidly declining state".—*op. cit.*, p. 170.

"The manufacture of thread, the occupation in former times of almost of every family in the district is now, owing to the comparative cheapness of English thread, almost entirely abandoned, and thus the arts of spinning and weaving, which for ages have afforded employment to a numerous and industrious population, have in course of 60 years, passed into other hands that supply the wants not only of foreign nations, but of the rivalled country itself".—*op. cit.*, pp. 365-66.

Cf. also Moreland who says in his *India at the Death of Akbar*:—

"Even if we conclude that Bengal wore sack cloth, the fact remains

was stated in evidence (in 1813) that the cotton and silk goods of India up to the period could be sold for a profit in British market at a price from 50 to 60 per cent lower than those fabricated in England. It consequently became necessary to protect the latter by duties of 70 and 80 per cent. on their value or by positive prohibition. Had this not been the case, had not such prohibitory duties and decrees existed, the mills of Paisley and Manchester would have been stopped in their outset, and could scarcely have been again in motion, even by the power of steam. They were created by the sacrifice of the Indian manufacture. *Had India been independent she would have retaliated, would have imposed prohibitive duties upon British goods and would thus have prescribed her own productive industry from annihilation. This act of self-defence was not permitted her ; she was at the mercy of the stranger. British goods were forced upon her without paying any duty, and the foreign manufacturer employed the arm of political injustice to keep down and ultimately strangle a competitor with whom he could not have contended on equal terms''.* (Italics are mine).

How another indigenous industry has been ruined along with its importance acquired towards 1885 by supplying markets outside of India with hand-loom gunny cloth and bags will be referred to in a subsequent chapter (*vide post* p. 402).

that cloth weaving was by far the most extensive industry in India, and I think it is fair to say that the aggregate production was one of the great facts of the industrial world of the year 1600. * * * Indian looms had a practical monopoly of the home market for clothes and in addition had export market'.

Then again Ralph Fitch in his *Travels* (1583) records :—

"From Bacola I went to Serrepore (Sripur). * * * Great store of cotton cloth is made here.

* * * * *

"Sinnergan (Sonergaon) is a towne sixe leagues from Serrepore where there is the best and finest cloth made of cotton and that is in India.

* * * * *

"Great store of cotton cloth goeth from hence and much rice, wherewith they serve all India, Ceylon, Pegu, Summatra, Malacca and many other places".

In Bengal, the use of coarse, home-spun cloth was given up long ago in favour of imported fabrics and other provinces have followed in its wake. Why should one spin and spin and spin and drudge for days and months together when obliging Lancashire and, latterly, Japan are at his door offering cheaper and finer piecegoods? Ye heavily indebted, starving peasantry of Bengal, forget your woes by imitating your betters ; give up the *Hooka* and smoke cigarettes, shun pedestrian journeys and use the motor-bus, that passes by your door, drink tea and "kill" your appetite, thus reducing your dietary bill ! And by all these scientific methods fill the pockets of the foreign exploiters. When you have occasion to go to the district town for purposes of litigation fail not to visit the cinemas and buy torch-lights. My reader will forgive me if I have to write in a serio-comic vein.

Political economists tell us that it is sheer madness for a country to go on producing articles of consumption for daily use when they can be imported much cheaper and a large section of our *intelligentsia* sneer at our humble efforts for the revival of the once flourishing universal home-industry. One might as well strive to bring back the extinct *dinotherium* in the present age as the *Charka*. There is, however, a glaring underlying fallacy which somehow escapes their notice. In most parts of Bengal there is but one staple crop, namely the *aman* rice, which does not occupy more than three months' time, including sowing and reaping. The remaining nine months of the year are absolutely wasted away in idleness. In some parts of the province there are over and above the rice or the jute—the *rabi* (winter) crops, including mustard and the pulses ; but even there the peasants have very little to do five or six months of the year. In these days of keen world competition a people which voluntarily, nay wilfully, commits itself to enforced idleness for such a long period in the year cannot expect to survive in the long run. Its effects are already appreciable in the shape of semi-starvation or malnutrition and hopeless indebtedness. Even in East Bengal

in the regions washed by the Padma, the Jamuna, the Dhaleswari, the Brahmaputra etc., where, owing to deposit of silt after subsidence of the flood, the land is highly fertile and yields an abundant harvest of rice, jute, pulses etc., the peasantry, though on the whole more prosperous, is also in the clutches of the *mahajans* (money-lenders).² The fact is that in these areas there is an over-congestion of population, as many as 600 to

² The wasting away of their time in idleness by the peasants has been noticed by several writers. (e.g., Panandikar : *Wealth and Welfare of the Bengal Delta*, p. 150). Cf. Also Jack : "The time-table of the cultivator, therefore, when his land is unfit for jute, shows three months' hard work and nine months' idleness; if he grows jute as well as rice he will have an additional six weeks' work in July and August".

"Gossip, intrigue and litigation occupy his spare time sufficiently as long as he has food to eat and money to spend".—*Vide*—L. Burrows : *Agr. Comm. Rep.*, vol. iv., p. 474.

The following account of peasant-life during the slack seasons in the agricultural (i.e., non-industrial) countries of Europe may be of interest as showing how the people utilise the time when no outdoor work is possible. In Bengal both the Hindu and the Moslem women being purda-ridden are precluded from taking part in any kind of outdoor labour; whereas it will be seen that the womenfolk of Europe materially help in earning an extra income over and above their household duties. Thus we read :—

"The whole family rises at the first sign of dawn, and after some hot coffee and bread starts work. The peasant, his grown-up sons and male helpers go to work in the fields—wheat, corn, rye, oats, maize, millet and buckwheat (the latter as an autumn crop) are grown; potatoes, peas, turnips, beans, beetroots, cabbage and cloves, planted everywhere, but only rich farmers go in for hop.

* * * * *

"While the husband is busy in the field, meadow or vineyard, the wife packs her big basket to go to market with. It is about a yard long and carried on the back. In it she carries fresh vegetables, some fruit and perhaps a loaf or two of homemade bread always eagerly bought in town, and when the long basket is nearly full she squeezes a short round basket at the top. Sometimes she carries eggs in it, but mostly a good many hens.

* * * * *

"The easiest time for the peasant is midwinter. Then he is obliged to stay inside, and while he mends pots and pans, does a bit of carpentry and sharpens sickles, knives and saws, *women are spinning, weaving and even embroidering.*

900 living in a square mile. Owing to the over-fragmentation of the arable land a constant stream of emigration from Mymensingh to Assam is going on. The sturdy people, practically all Mahomedans, being free from the baneful caste-prejudices, also enlist in numbers as lascars (crews) in the inland navigation and ocean-going steamers, and thus to a certain extent relieve the congestion.

Fertility of the soil is by no means synonymous with the prosperity of the people living thereon—rather the reverse is often noticed. The case of Rungpur may be cited in illustration of this apparent paradox. The land in this district is very fertile and it yields several crops in the year, including rice, jute, tobacco, and vegetables of various kinds. The inhabitants of the district are, however, very backward and illiterate. Often they are contented with cultivating just enough for their bare subsistence, and are indolent to a degree and are evidently

“Not the men only but the women, too, know how to prove themselves beasts of burden capable of astounding feats of endurance. You have but to look at them as they tramp over the mountains, tall and erect, with their immense loads accurately balanced on their heads, like the women of old, or when their freight is bulky, packed into a basket carried on their backs. Often, on the top of the great heap may be seen the curly head of a baby—the latest born. The mother takes it with her thus, nomad-fashion, and gives it her breast on the way.

“The nomadic instinct, indeed, is singularly prominent in the population of the Friuli. In groups of two or four or five, with a baby in their big basket and sometimes a little toddler holding on to their skirts, the Friuli women traverse the whole of Italy, selling *mescuglieri*, as they say in their own dialect, spoons, yarn, needle-cases and other such odds and ends, but above all domestic utensils of wood made by their menfolk during the long winter. And what is strange and characteristic about it is that in these peregrinations, which continue for months and months and which sometimes are extended beyond the frontier, no man ever accompanies them. These sturdy provincial Amazons are entirely independent in their little commercial ventures”.
—*Life of Benito Mussolini* by Margheritta G. Sarfatti, pp. 134-35.

Throughout the Madras and Bombay Presidencies and even in Behar and the United Provinces and in the Punjab, women of certain peasant classes, however, help considerably in the field-work.

contented with their lot, sitting idle for several months in the year. They have of course given up the *Charka*. It must, however, be admitted that the Mahomedan population of Rungpur living side by side with the Hindu Rajbansis, though derived from the same stock, is somewhat more energetic.

In marked contrast with the peasantry of Bengal, those of the Meerut district and the Punjab are still plying the *Charka*, and the yarn, generally of ten to twelve counts, is woven into coarse cloth for their own use. During my recent visit to Meerut, in December, 1929, I was taken to a village twenty miles north of the city named Khatauli and to my infinite delight and no less surprise I found in almost every household the primitive machinery at work. The matron, the daughter, and sometimes the daughter-in-law sitting in a circle basking in the sun and plying the wheel. But "civilization" even here is on its slow and imperceptible march. The men in their turbans, and now and again in their *dhoties*, are going in for the finer imported stuff. A few sacrificing young men belonging to the local Gandhi Asram are trying to encourage the womenfolk by buying their surplus products ; but the funds at their disposal are very limited. Had there been an organisation to look after this struggling indigenous industry almost miraculous results might have been achieved. But to the Department of Industry here as in Bengal the *Charka* is anathema, as its successful revival would spell ruin to Lancashire textile manufacturers. Mr. Ramsay MacDonald uttered no more than bare truth when he wrote "one can feel melancholy to hear it (the government) pride itself that it has provided cheap cotton (i.e. cotton goods) at the expense of the old industries. It is blind to the important items on the debit side of that account". In the town of Meerut there are scores of *raises* and wealthy *bantias*, but they are, as a rule, uneducated and impervious to modern ideas. Some of them would gladly subscribe liberally to any fad promoted by the British Collector or Commissioner or spend Rs. 50,000 in processions and *tamashas* on their sons' and daughters' wedding ; but they turn a deaf year to any appeal for pecuniary help calculated

to do permanent good to the country. Here I must pause for a while to dwell upon the psychological aspect of the problem. It is generally found that in Bengal peasants who are comparatively well off disdain manual labour and prefer to imitate the gentlefolk. In some parts of lower Bengal they toil hard for a month or so in the beginning of the monsoon, for the sowing of the *aman* paddy ; they then sit absolutely idle for months together. The crop is even reaped with the agency of hired labourers from the up-country.

The tragic aspect of the situation now stands revealed in all its naked deformity. The peasant, eschewing his coarse home-spun in favour of fine Lancashire cloth, indulging in foreign cigarettes and giving up home-grown tobacco, refusing to walk a distance of two to four miles from his village to the nearest district town, generally for purposes of litigation, but jumping into the nearest motor-bus and gladly paying a two-anna bit—all these mean that he parts with so much extra produce of the land in exchange for which he finds the money wherewith to enjoy the amenities of modern “civilized” life. It is true that in the United States of America every fifth or sometimes third farmer drives in a Ford-car ; but then with him time is money ; he is fairly educated, intelligent enough to apply the latest scientific methods of agriculture and thereby to increase the produce of his land. But his counterpart in Bengal steeped to the marrow in ignorance and illiteracy ; following the time-honoured primitive methods of cultivation³

³I quite agree with Dr. Voelcker when he says : “What does, however, prevent them from growing large crops is the limited facilities to which they have access, such as the supply of water and manure”. But this does not shake my argument. During my recent tours in Saran, Meerut etc., the miserable-looking clumps of sugarcane made me almost weep. No less primitive was the method of expressing the juice and of boiling it down over naked fire. No wonder that the planters of Java following the scientific methods of agriculture and of expressing juice from the cane and boiling it in vacuum pans are ousting the former.

and yet adopting western "civilization" simply courts ruin.⁴ There are positive signs that except in the deltaic areas the fertility of the soil throughout India is on the decrease. Sixty years ago the yield per acre of the *rabi* (winter) crops e.g. mustard, pulses in and about my native village was almost double that of today. Not only is the land not allowed to lie fallow but scarcely any manure is applied. Year in and year out the same soil is made to yield the same kind of crop with the result that it is impoverished, the outturn of the crops diminished, and the quality deteriorated. Superficial observers, as also our official apologists who want to make out a case for the prosperity of our peasant-folk, complacently point to the increased consumption of imported goods referred to above. A people in a chronic state of starvation or indebtedness, with its producing capacity diminishing and yet going

4 Cf. "* * When the [Red] Indians were the sole inhabitants of the wilds from whence they have since been expelled, their wants were few. Their arms were of their own manufacture, their only drink was the water of the brook, and their clothes consisted of skins of animals, whose flesh furnished them with food.

"The Europeans introduced amongst the savages of North America fire-arms, ardent spirits, and iron: they taught them to exchange for manufactured stuffs, the rough garments which had previously satisfied their untutored simplicity. *Having acquired new tastes, without the arts by which they could be gratified*, the Indians were obliged to have recourse to the workmanship of the whites; but in return for their productions the savage had nothing to offer except the rich furs which still abounded in his woods. Hence the chase became necessary, not merely to provide for his subsistence, but in order to procure the only objects of barter which he could furnish to Europe. Whilst the wants of the natives were thus increasing, their resources continued to diminish.

"Among the North-Western Indians particularly, the labour of supplying a family with food is excessive. Day after day is spent by the hunter without success, and during this interval his family must subsist upon bark or roots, or perish. Want and misery are around them and among them. Many die every winter from actual starvation." De Tocqueville—*Democracy in America*; i, p. 401.

The above description represents a state of things which prevailed a century ago. The Red Indian has now been almost wiped out of existence. The Bengali peasant likewise courts ruin.

in for the glamour of imported tinsels, only commits economic suicide. Its fascination for the tawdry dress, gaudy gewgaws and tinsels of modern "civilization" representing the "workmanship of the whites" is only comparable to that of the bird for the rattle-snake—a fascination which lures it to its doom.

It is not necessary to multiply instances to prove how millions of spinners, weavers, cutlers, smiths, boat-men and carters have had their bread snatched away from their mouths by the triumphant march of modern "civilization."⁵

⁵ Cf. "India had, however, purest wrought iron and finished steel and the specimens still existing in the shape of lintels, monuments and arms have been the envy of modern metallurgists. It is sad to reflect on the gradual decline of the indigenous iron industry. The race of iron smelters, *lohars*, has become almost extinct. Similarly the population of backsmiths, *karmakars*, has been steadily losing ground. What a vast number was employed by kings alone for making armour and arms. How many workshops were there for making nails only, door fittings, locks and padlocks. The present abnormal pressure on land . . . is largely due to the dwindling away of the industries of old. Take the case of traffic. What a prodigious number of men found employment in carrying goods by land and by water! Think of the millions whose calling was the building of chariots, carts and boats. Steam-driven vehicles and automobiles are now penetrating the peaceful villages."—J. C. Ray. *Cal. Rev.*, Oct., 1927.

Cf. Again—"In fact, all the evidence goes to show that the social and economic disturbances which have followed in the wake of Western civilization breaking in upon natural or primitive stocks and upon communal organisations based on a plan of simple outdoor living, has led to a deterioration of the Indian constitution with loss of staying power—the power to resist and to recuperate. The increasing pressure on the soil of an increasing agricultural population, together with the economic destitution of the artisan classes exposed to a ruthless competition with the forces of modern machinery and capitalism, is no doubt the ultimate cause of this loss of staying power, as evidenced by the phenomenal excess in our mortality and sickness rates; and in some parts of the country as the Bengal delta, the neglect of the old irrigation system, aggravated by colossal blunders of embankment and railway alignment, appear to have been responsible for turning a land of peace and plenty into a home of stark want and fell disease".—Sir Nilratan Sircar. This eminent physician's diagnosis is equally correct.

Also Cf. "Many now make use of the railway, and I have heard bitter complaints from Bengali boatmen of the loss of custom sustained from this cause. 'Formerly', they said, 'a gentleman taking his family

Sir John Birdwood writing in 1880 appeals to "Indian native gentlemen and ladies that they should make it a part of culture [I should add of honour too] never to wear any clothing but of native manufacture".

I hope I have said enough to convince my readers that the adoption of European ways of life by the intelligentsia as also to a modified extent by the peasantry and the consequent increased consumption of imported articles by no means argues prosperity, rather the reverse. There is not enough food-stuff grown in the land for the support of the population and yet the purchase of the foreign luxuries goes on increasing. Our political economists, who are mere college dons, have only a pharisaical sneer for the *charka*; but they are silent when asked to find any sort of occupation for the six to nine idle months in the year. The thirty crores which Bengal now pays

to Benares or Allahabad, or other places of pilgrimage, would hire a boat, and would be weeks or even months on the journey; but now he engages a carriage in the train, and the whole distance is performed in one day".—Beveridge: *Bakarganj* (1876), p. 227.

Cf. More orders against use of foreign goods and luxuries.

"The Shanghai District Government, on Aug. 1, issued a further proclamation urging the Chinese people to consume only native made goods and to abstain from the use of foreign luxuries. The proclamation also called upon Chinese manufacturers to reduce the selling prices of their products and to improve their manufacturing methods".—*The China Weekly Review*, Aug. 9, 1930.

In the field of National Reconstruction Chinese students must wear native made cloth.

"The Ministry of Education at Nanking on May 16 issued a circular order to Government educational institutions of all grades throughout the country giving instructions that all students must wear uniforms made of native (cloth) and where possible must confine their purchases to native products".—*Ibid.*, May 24, 1930.

Chinese labourers object to new Swedish Match Factory.

"The proposed establishment of a large match factory at Chowkadoo, Shanghai, by the Swedish Match Trust has evoked agitation in Chinese labour circles and a circular telegram recently issued by the Shanghai General Labour Union Preparatory Committee calls upon the people and Government authorities to prevent foreigners from opening the factory in China, so as to protect the domestic match industry.—*Ibid.*, June 28, 1930.

for the enforced idleness to which she has been doomed used to be circulated every year among her own spinners and weavers. By the ruin of her national industry she sends this tribute to her Lancashire and Japanese capitalist masters.

Once you have allowed your active habits to be lost, it is all over with you. So it is with mankind in general. The time which the womenfolk of Bengal not only of the peasantry but also of the respectable classes used to devote to spinning and embroidery is now simply wasted away in idle gossip and in an extra dose of slumber during the day. Renan has drawn pointed attention to the mischief done when an entire class of people is taught the seductive charms of idleness.

"Great is the joy of the poor man, when tidings of happiness without work are brought to him. The beggar to whom you say that the world will be his, and that, spending his life in doing nothing, he is yet accounted noble in the Church, and his prayers have so much the more efficacy, that beggar soon becomes dangerous. It was noticed in the movement of the last Mersianists in Tuscany. The peasants, indoctrinated by Lazaretti, having lost the habit of work, were reluctant to resume their ordinary life. As in Galilee, as in Umbria in the time of Francis of Assisi, the people imagined they could conquer heaven by poverty. After such dreams, they do not willingly resign themselves to take up the yoke once more. A man will turn apostle rather than resume the chain which he has believed broken. So hard it is to bend all the livelong day under a humiliating and thankless task".—*Marcus Aurelius*.

The Bombay Cotton Mills at best give employment to 3 or 4 lacs, as do the jute mills on the Hughli; and the Cawnpur mills find occupation, it may be, for another couple of lacs. Utmost two millions earn their bread in the industrial centres of India, but what of the remaining 318 millions? Will you wait till Manchesters, Liverpools, Glasgows and Dundeels spring up here and transfer 70 per cent. of the rural population to the urban areas? Are you going to industrialise rural India? With the exception of Calcutta and Howrah there are no towns in Bengal. The district towns are only towns in name; they are the localities where the law-courts have sprung up and they support a parasitic population. I am

afraid you will have to wait till doomsday. Apart from the question of the desirability of bringing about this happy consummation, have you, my Bengali brethren, ever shown sufficient capacity for it? Why then all this tall talk about opening up of big industries and relieving congestion?

After all, India is an agricultural country and must ever remain so. The problem is how to increase the productivity of the soil by improved methods of agriculture, and how to supplement the scanty income of the dwellers in the villages by the introduction and encouragement of a subsidiary occupation. I hold that spinning and weaving are the two parts of the one cottage industry which admits of universal application in India.

A simple calculation will show the immense potentialities of the *charka* for which Colebrooke pleaded hard more than a century and a quarter ago. The population of India is 320 millions. If a fraction of the millions in the villages—say only one-eighth—were to earn only 2 pice (a pice=one farthing) a day the total would amount to 80,000,000 pice or Rs. 12,50,000 per day, which works out to $365 \times 12,50,000$ or Rs. 45,62,50,000 crores per year. Industrialists now-a-days talk of mass production; but in India *we have to count population in masses*; hence earnings by the teeming millions, however insignificant they may appear at the first blush, *when calculated in mass*, amount to crores. The well-known aphorism in the *Hitopadesa* (Salutary Lessons)—*तणैगुणत्वमापद्मैर्वध्यन्तेन स दलितः*—i.e. a single blade of straw is by itself very weak, but bundles of it when twisted into a rope are strong enough to bind a mad elephant—holds literally true here.

My speeches and writings on Khaddar during the last seven or eight years, if put together, would fill a big volume. Yet it is necessary to harp on the subject because of the callous indifference of a section of our intelligentsia who would do nothing, create nothing, but simply live as parasites, and indulge in cheap sneers and gibes from their snug and comfortable easy chairs in the towns. That *Charka* is not only a

real boon but an insurance against famine is proved to demonstration by the recent happenings in North Bengal. In the course of the flood relief operations of 1922-23, certain centres round about Atrai (Rajshahi) and Talora (Bogra) were selected for experiments in this direction. During the time of dire distress, some one thousand *charkas* were distributed and several maunds of yarn began to be collected at the end of 4 or 5 months' operations. The yarn was locally woven into *Khaddar* thus giving additional relief to the weavers (*jolas*). The coarse home-spun had a ready sale in Calcutta through our organisation the *Khadi Pratisthan*, thanks to the idealism and patriotism of young Bengal. Matters were looking bright and favourable. Unfortunately, with the prosperous outlook of the next and the following year's crop of jute and paddy, the *charka* began to be discarded and the supply of *Khaddar* automatically diminished. The *Pratisthan* since then had to drag its existence at a loss of four to five thousand rupees a year. However, we persisted in our efforts as in a few localities the helpless widows and their daughters and daughters-in-law had appreciated the *charka* and stuck to it. The net result has been that starting from yarn of eight to ten counts, we have got to thirty to forty counts. Moreover, as the spinners have acquired the old dexterity, the price of the yarn has been considerably lowered. The whole-time spinners earn as much as two annas or more and the part-time one anna a day. Owing to the abnormally low price of jute due to trade slump (1931) we are literally besieged by applicants. Following in the wake of the universal acute distress, there is the terrible ravage caused by the recent floods and the miseries of the people know no bounds and the cry has been raised: "*Give us charka: give us charka.*" Relief operations organised by various Calcutta bodies are offering help in the shape of doles of rice, but they touch only the fringe of the affected areas. Moreover, owing to trade depression, the collection of money is poor. Had the *charka* been in vogue, every able-bodied spinner including boys and girls of seven years and upwards could have

easily earned on an average an anna a day, which would have secured each individual not only his rice but also other ingredients of his meal, including oil, salt, dal, etc. No one has got the Fortunatus' purse. As the fund gets exhausted within a short time, relief operations cease as a matter of course and the sufferers are left to their fate. Then again, dole-giving, though it may be a duty and necessity for the time being, has its objectionable feature as well. If continued, it demoralises him that gives and him that takes ; whereas if one can give some return in exchange for the help he receives, his self-respect is not hurt. Moreover, as the yarn has a market value, the sale proceeds again go to maintain the spinners and the cycle of operations goes on.

Motor lorries are constantly plying in the busy streets of Calcutta carrying loads of two to three or even five tons each. Within the last few years a large number of wheel-barrows and man-driven carts exceeding a couple of thousands have sprung into existence carrying loads of five, ten, fifteen or twenty maunds. The smaller ones are pulled by one or two men while the big ones are dragged sometimes by two men, another two pushing from behind. Here it is man-power competing not only with bullock-carts but also with machine-driven tractors. The fact is these hard-working toilers come from Behar and the U. P. where the population is congested and it is difficult to earn even a precarious livelihood. Hence the contention that human labour cannot compete with machine does not apply to countries like China or India where the teeming millions being in a state of semi-starvation are glad to work for a pittance, which would be regarded as ridiculously scanty in an industrial country.

Mr. Brajendranath Banerji has been doing a public service by unearthing from the newspaper-files of a century or more ago valuable materials. The following pathetic letter which appeared in the columns of the *Samachar Darpan* (ante p. 9) fully bears out Colebrooke's lament and proves what havoc the foreign imported yarn has made in the economics of India.

"Charka is my bread earner
Charka is my son".

Below is given the free English rendering of the representation of a Spinner.⁶

Santipur,
5th January, 1828.

“To the EDITOR, *The Samachar*.

I am a spinner. After having suffered a great deal, I am writing this letter. Please publish this in your paper. I have heard that if it is published it will reach those who may lighten my distress and fulfil my desire. Please do not slight this letter from a poor sufferer.

I am very unfortunate. It will be a long story if I were to write all about my sufferings. Still I must write in brief.

When my age was five and a half gandas (22) I became a widow with three daughters. My husband left nothing at the time of his death wherewith to maintain my old father and mother-in-law and three daughters. I sold my jewellery too for his *Sradh* ceremony. At last as we were on the verge of starvation, God showed me a way by which we could save ourselves. I began to spin on *Takli* and *Charka*.

In the morning I used to do the usual work of cleaning the household and then sit at the *Charka* till noon. But the foreign yarn [imported from Lancashire] has brought about our ruin only. Men cannot use the cloth out of this yarn even for two months, it rots away. I therefore entreat the spinners over there, that, if they would consider this representation, they will be able to judge whether it is fair to send yarn here or not.

A representation from a suffering Spinner.”

⁶ The poor woman writes under the impression that it was the hand-spun (*charka*) yarn which on account of its cheapness was finding a ready market. She naturally could not dream that the imported yarn was the product of spindles driven by steam-power.

CHAPTER XXII.

MODERN CIVILIZATION—CAPITALISM, MECHANIZATION AND UNEMPLOYMENT.

I. OVER-PRODUCTION AND CONSEQUENT UNEMPLOYMENT.

What economic chaos has been brought on the Western countries is evidenced by the recent dismal tale of unemployment in Europe and America.

It is well-known that a world-wide economic depression has resulted in many evils. One of them is unemployment which is growing by leaps and bounds in many countries, e.g. England, U. S. A., Germany, etc. India too has her huge army of the unemployed though it is significant to note, no statistics of these unhappy people are kept in this country. A cable from London now informs us that the problem of unemployment has begun to give profound cause for anxiety to the U. S. A. Government. Eight million people, it is reported, are out of work in the United States. The New York correspondent of the *Times* says that "large middle-class people have been reduced to desperate condition. Thousands of clerks are working or seeking work as common labourers. . . . Many such families are making their children stay in bed all day as they cannot afford the fuel needed to warm the house".

"There are also more gruesome stories to be told. 'The city authorities', says a message, 'have had to place locks on all dust-bins left outside houses overnight to prevent the starving unemployed from eating rotten food out of them and so poisoning themselves. A man, it is said, stole a loaf of bread and was caught. He felt the disgrace so much that he hanged himself.' Well, happenings like these are not quite rare in our country in times of famine or similar distress. Dire want has driven people in this country to sell their wives and children and even to commit suicide. What is striking, however, is that

America, the home of plenty, the richest country in the world, should have to undergo such straits. A sum of £2,200,000 is said to be necessary to afford relief to these unemployed. But it will not be difficult for the American millionaires to secure the amount. How is it that inspite of there being so many millionaires in America such shocking things are happening in that country?"—From a local paper dated, December 26, 1930.

Fortunately, a new school of economists is springing up, which has not failed to look deeper into the problem and diagnose the cause of the world wide unemployment malady. About two years ago (1928) *The Statesman* of Calcutta observed :

"At present no one has any cure for the incipient manufacturing crisis in the West but restriction of production and consequent unemployment. To select two industries only ; America makes as many boots and shoes in six months and blows as much glass in seventeen weeks as she requires for a year. She must either dump the surplus elsewhere or shut up her factories. Lancashire and Yorkshire are in similar plight. Every country has taken to manufacturing, and machines have increased production many times over. But there is no corresponding increase in the possibility of consumption. The mass of the world remains too poor, and the goods cannot be distributed. Above all in the continents of Asia and Africa material progress has made so little advance that the market is trivial in comparison with the population. The people's wants are few." I may add another notable instance. Henry Ford was turning out of his factory in 1920-21, 1,250,000 cars.¹ Counting the working days as 30 i.e. deducting sundays and holidays, the output would come to 4,000 a day. Latterly Ford, in his rage for out-selling his competitors, increased it to 6,000 a day ; while other makers also emulated him in this mad pursuit. The result has been a crash. Can the world

¹ Henry Ford : *My Life and Work*, ed. 1925, p. 145.

go on buying cars *ad infinitum*? The present slump and trade depression are in no small degree traceable to over-production of articles.

The above was written some two years ago. As I am sending it to the press I read in a local journal (11-3-32):

“Mr. Henry Ford’s business philosophy that mechanization does not reduce the number of workmen but rather increases it as well as his wage; doctrine that the higher the wages the better it is for business, has suffered a rude shock from the course of events during the last two years. We have been told that in his agricultural farm he has discarded machinery and has gone back to primitive methods in order to employ the largest number of workmen. High scales of wages,—he set the fashion in them—are things of the past, and he has bowed down to the inevitable and followed the general practice of wage reduction.”

II. MACHINE DRIVING MEN OUT OF WORK.

That a crisis of unemployment is again upon us, and that it is of a new and unexpected type, coinciding not with a period of depression, with curtailment of production and the shutting down of industries, but rather with an era of abnormally large production, is asserted by Evans Clark, writing recently in *The New York Times*. Mr. Clark holds that the consequent inability of the industries to absorb the men whose work machinery is now doing, may well account for present labour conditions. He writes: “Unemployment has always been associated with hard times. When business was bad, the factories laid off their men. But business always picked up again, and jobs were to be had for the asking.

“The present unemployment crisis is distinctly different. No marked and general decline has set in that can be compared to conditions in years of depression. The United States Steel Corporation—as good a barometer as can be found for he

business atmosphere—is operating at 89 per cent. of capacity this month, compared with 60 per cent. at the close of last year.

“The use of electric current—another good index of industrial activity—registered a 7 per cent. higher level than in the same month last year.

“Some other influence is at work which has not been generally recognized, but which, gathering strength with the years, now emerges as an issue of national importance. It begins to look as if the onward march of machines into every corner of our industrial life had driven men into the ranks of the unemployed. Only on this assumption can the paradox be resolved.

“So far, the machine has created enough new jobs to take care of the workers it has displaced by its vast increase in production and the expansion of subsidiary industries. There is no assurance, however, that this happy balance can always be preserved. The present difficulty is evidence to the contrary.

“Three lines of inquiry are in order. First, is there an unemployment crisis to-day? Have American plants been shut down in sufficient numbers to account for the situation? If production has not fallen off sufficiently to account for the number out of work, it must then be assumed that increasing mechanization is a factor in the situation.

* * * * *

“The next question concerns production. One would expect to find a slump in factory output that would roughly correspond to the decrease in jobs. But precisely the reverse has occurred. The factories and workshops of the United States produced more goods and services in 1927 than at any time in history, with the exception of the previous year, while the output has grown and the number of workers required to produce it has actually decreased since 1919.

* * * * *

“In the building industry especially have labour-saving devices made spectacular advances. The trenching machine,

the gasoline crane, the bucket-conveyer, and other devices have gone far to make construction a machine industry.

* * * * *

"Coal-mining is fast being transformed into a factory routine. Already 71 per cent. of American bituminous coal is mined by machinery. The coal companies could dig a year's supply of bituminous coal to-day with only a little over one-half the labour it would have required in 1890. Steel companies can produce almost three times as much pig-iron to-day as they did in 1904 with the same crew of men.

"It is estimated that 45,000 harvesting and threshing machines have replaced more than 130,000 high-priced workers on American farms.

"The full story of men displaced by machines has yet to be written. Some of the men whose places are taken by a machine are given other jobs in the same concern, but such an absorption can only take place when the firm's operations are expanding faster than labour-saving devices are being installed. In the light of the figures, it is not surprising that the present slump in general business activity, far less severe than that of 1921, should have already produced an unemployment crisis much greater in proportion".²

The climax has now been reached. Recently a deputation of the workless waited upon President Hoover. Their petition tells its own tale:—

"In this land of ours the soil is rich, the earth is bursting with abundance, bins are filled with grain, storehouses are

² Cf. "The craze for industrialization has seized many of our public men, but the example of Europe and America ought to be an eye-opener; as has been well-said—'Half the people in industrial countries are racking their brains in devising labour-saving appliances and the other half in solving the question of unemployment'. The latest figure in England is two millions, while according to Mr. Thomas there were over three millions unemployed in Germany and half a million in Italy and the unemployment figure in the United States was given as from three to six millions".—*Vide* my address on the occasion of opening a Swadeshi Exhibition at Madras, July 15, 1930.

laden with goods, shelves are overflowing with merchandise, vaults are stacked with bars of gold, and the very channels of trade are choked by undistributed surplus products of mill and mine and farm. Yet 11,000,000 men and women offer their brawn and brain to masters of work in vain. They stand hungry in bread-lines, mute symbols of an economic order out of joint." *The Statesman*, Jan. 16, 1932.

III. LABOUR-SAVING DEVICES

"Stuart Chase gives many varied examples of displacement of human labour. By means of a new electric hand-saw one man takes the place of four; a power chisel does the work of ten men. The dial system on the telephone takes the place of switchboard girls for local calls. A single week records fourteen new inventions and discoveries. Seven men now do the work which formerly required sixty to perform in casting pig-iron. One man replaces 42 in operating open-hearth furnaces. A brick-making machine makes 40,000 bricks in an hour. It used to take one man eight hours to make 450. Simplex and Multiplex machines are eliminating the need for trained telegraphs—and the message is automatically printed at the receiving office. In type-setting a man at a central office can set type in offices as many as 500 miles away—and this has resulted in the dismissal of thousands of printers in U. S. A."—Demant: *This Unemployment*, pp. 34-35.

"In the tobacco trade, a cigarette machine recently installed is capable of turning out 12,000 cigarettes a minute, * * * * Only three employees are needed to tend it and its productive service equals 700 pairs of hands."—*op. cit.*, p. 36.

"The Statist adds: 'The increase in productivity of each worker has gone hand in hand with an increase in the number of unemployed'."—*op. cit.*, p. 39.

The Manchester School of Economics made the fatal mistake of starting from the premises that the supremacy of

Lancashire in textile industry would last for ever ; it never occurred to them that a time would come when the Continent of Europe as also America and the "unchanging" East would wake up and prove to be formidable competitors in the field. Matters thus went on smoothly for nearly half a century and 80 per cent. of the population of England was transferred from the countryside to urban area. As you sow so you reap, and now the unemployment problem is puzzling the politicians and the economists.

I have lately been making an extensive study of China as her economic condition is in many respects comparable to that of India. She has a population of 480 millions i.e. 48 crores. Let me quote an American authority, by no means very friendly to China.

"Coincident with these processes, railways were throwing out of employment hundreds of thousands of coolie burden bearers ; steamboats on the rivers were taking the livelihood out of the mouths of hundreds of thousands of men who had carried China's inland water traffic in junks and canal boats, and were making useless the work of the tens of thousands who had acted as trackers and hauled the old-style ships up the Yangtze River gorges. Foreign factories were sending machine-made goods into China at the same time, and foreign capital was building modern factories in Chinese cities, thereby helping to destroy the household and small shop industries which had existed with little change for centuries.

"The combination of these forces created unemployment and want".—Abend: *Tortured China*, pp. 234-5.

Again : "Contact with the mechanical civilization of the Occident has undoubtedly been a tragedy for the Chinese people".—*op. cit.*

Listen again to what an eminent cultured Chinese has got to say on this subject :

"But China has not been able to shut the door in the face of the invasion of foreign machines and cheap machine-made goods, and those two invasions, making idle tens of millions

of our skilled hand workers and coolies, have ruined us, just as an influx of millions of Chinese labourers would have upset the American industrial scheme".—*op. cit.*, p. 281.

Another authority arrives at exactly the identical opinion. The sudden impact of highly progressive and industrially advanced nations on a people conservative to the core and which has been moving in its own way for millenniums has spelt economic disaster to China. "The province of Szechewan and Western China has an estimated population of 100,000,000. The only transportation facilities are those through the rapids of the upper Yangtze as it passes through the great gorges. The junks must be pulled up the swift current by large crews of men—sometimes fifty to one hundred per vessel. The number of people dependent upon this trade has been estimated at from five hundred thousand to one million. Recently it was discovered that steamboats could safely make the trip at certain seasons of the year. Both English and American owned shipping lines then put on regular service of steamboats for freight and passengers. It is reported that this traffic was so profitable that the cost of a steamer could be covered in a single trip. The operation of the steamboats added greatly to the security of the traffic, and so took the freight. The junks could not successfully compete; not only on account of cost, but because many were overturned by the wash of the steamboat. Meanwhile, the thousands of boatmen were out of a living, as were also the large population of trackers, shipwrights, caulkers, rope-makers, restaurant and hotel-keepers etc., that served them. * * * * The situation is tragic; a few American shippers gain these profits by depriving thousands of Chinese of their living wage of ten cents per day—and in so doing destroy an occupation traditional for generations".—*China: A Nation in Evolution*, pp. 425—7, by Monroe.

In India too, capitalism, specially British capitalism "in ruthless pursuit of its own interests persistently and deliberately ruined the old indigenous Indian Home industries without

affording the population which it robbed of its former means of livelihood new avenues of employment." An obvious example will illustrate this point.

Hitherto husking of paddy was the only home industry in Bengal by means of which poor widows with infants in arms could eke out a miserable living. Now thanks to the "march of civilization", power-driven rice-mills are springing up all over Bengal with the rapidity of the prophet's gourd. When it is remembered that a single rice mill snatches away morsels of bread from the mouths of hundreds of the destitute, the result can well be imagined. A few capitalists are lining their pockets at the expense of thousands of their helpless sisters. It is for this reason that the efforts of the great leader of the Indian masses are always directed against modern mass production by machinery.

"The hatred of machinery, the hatred of capitalism which burns so strongly in Gandhi is the reflection of the hate of millions of Indian peasants and handworkers whose traditional basis of existence was completely destroyed by capitalism and who were excluded from the possibility of existence on a capitalist basis as a factory proletariat * * * *

* * * * *

Gandhi also sees everywhere only the abuse of machinery and the enslaving of the masses in the interest of a few employers which industrialism has brought about. The machine wrecking of Gandhi, therefore like all his doctrines, is the result of this exploitation. In attacking machinery, Gandhi is protesting against its abuse. Thus Gandhi says, 'I am not fighting machinery as such, but the madness of thinking that machinery saves labour. Men 'save' labour until thousands of them are without work and die of hunger on the streets. I want to secure employment and livelihood not only to part of the human race but for all ; I will not have the enrichment of the few at the expense of the community. At present the machine is helping a small minority to live on the exploitation of the masses. The motive force of this minority is not humanity

and love of their kind, but greed and avarice. This state of things, I am attacking with all my might. * * * * * Machinery must not strive to cripple and stunt human limbs. It must one day cease at last to be a mere tool of acquisitiveness ; then the workers will no longer be overstrained and the machine will be a blessing instead of danger. I am aiming at a change in working conditions of such a kind that the mad race for money will come to an end, and the worker will not only be adequately paid, but will also find work which is something more than mere slavery. On these conditions, machinery might be as useful for the men and women who work it as for the state which possesses it'." (*Lenin and Gandhi* by Rene Fillöp Miller pp. 230-231).

And who can say that Gandhi is very wrong when one reads the following description of "modern civilization" based on capitalism by Wesley O Howard, a Justice of the Supreme Court of New York?—

"And man has also built modern cities ; New York, London, Chicago, Paris, Berlin, Vienna, Buenos Aires—vast vortexes of civilisation—the human atoms moving, whirling, hurrying, coming, going, disappearing. He has erected "skyscrapers" reaching up till they touch the clouds, 700 feet into the air higher than hawks or eagles perch ; and there human beings live and breathe and breed. And under these cities and "skyscrapers" he has dug "subways"—great networks of subterranean highways ; paved, arched, lighted, spacious, winding, ill-smelling. Swarms of human creatures, like ants rush down into these subterranean passages and are hustled and whirled to their destination.

"And men, in their modern cities build broad, open boulevards ; beautiful, healthful, ample thoroughfares ; and they also build dark, deep, narrow streets, like mountain canyons through which human torrents pour as floods, plunge through gorges. And they construct great parks and erect statues and have zoological gardens and maintain hospitals ; and they have damp, crowded basements and gloomy attics and

unsanitary yards and poorhouses and madhouses and penitentiaries. In these basements and attics babies are born who never see the blue sky or smell the fresh air, and mothers die who never touched the greenfields or walked in the silent forests. And this is civilization !

THE UNDERWORLD.

“The development of man has also produced the underworld ; the spawn of the factory system, the spawn of the community ; the parasites of society. The underworld, where boys are taught to be thieves and girls trained to walk the streets ; the land of *dope* friends, degenerates, hags, harlots, pickpockets, paupers ! those who prowl in the dark and flit like spectres in the grey of the morning. Those who sleep with their clothes on in bunks or rags, eaten with vermin, stupefied with stench ; living in squalor, want, privation, wretchedness, filth and disease.

“In the region of the wretched, beyond the pale of law and the touch of charity, babies are strangled, the old are abandoned, the sick neglected, the weak maltreated, the insane tortured, the young polluted. In these crowded quarters of the lowly, women lie in confinement in the same room where thugs swear and gamble ; the dying gasp and struggle while theives smoke and wrangle ; children play and prattle while harlots drink and gabble. This underground community knows no class distinction, no nationality. All speak one language—the jargon of the gutter. All are peers—Chinamen, white women, girls, negroes, gypsies, Japs, Mexicans, sailors, tramps, fugitives, anarchists, gunmen, beggars, swindlers, smugglers.”

It will thus be seen that mechanization coupled with rationalization³ has landed the world in disaster. Thus we read : “The Government of the United States stands faced

³ The avowed purpose of rationalisation is the mobilization of the fighting forces of an industry against the attack of the foreign manufacturer.

with a budget deficit of 200,000,000 dollars. Production of automobiles, in October this year stood at 40 per cent. below that in October, 1930 and for the first ten months of the present year at 29 per cent. below the crisis year of 1930. In November automobile production was 80 per cent. below normal: 10 out of 29 factories were completely shut down. The export trade of the United States fell for the period—January to August from £681,000,000 in 1929 to £519,000,000 in 1930 and to £326,000,000 this year. The number of unemployed in the United States to-day is estimated to be already more than 10 millions. * * * *

“The madness of the capitalist order cannot better be illustrated than by the fact that in the midst of superfluity of raw materials millions of human beings are delivered up to misery and death by starvation—wheat is rotting, sugar is being destroyed, coffee thrown into sea, maize set fire to, cotton burnt and all the time millions of human beings are without the most indispensable food-stuffs and necessities of life. The statement presents the picture as it is. The local daily—*Deutsche Allgemeine Zeitung* in a recent article, ‘World Surplus of Twelve Million Tons of Wheat’, gave out that in America wheat is being burnt under steam boilers. In Brazil, the greatest coffee producing country up to September this year 59,875,200 kilos of coffee were destroyed.”—Berlin correspondent of *Liberty*, Jan. 7/32.

This overproduction—offspring of capitalism *cum* industrialism—has another moral aspect. In order to get rid of superfluous products lying heavy on hand propaganda on a grand scale is started by means of advertisements including cinemas and movies—morbid tastes and appetites are created or pandered to among the simple, unsophisticated peasant folk; this sort of lying and demoralising propaganda is the source of infinite harm. Elsewhere I have drawn attention to the devices resorted to for popularising tea-drinking among the masses and its baneful consequences. Of late as tea is a slump in the European market the Tea Association is making frantic

efforts to popularise its use among the dumb multitude. What if fifty to sixty millions of them are in a chronic state of destitution and starvation and do not know the pleasures of a full stomach? Capitalism stops short at no mean trickeries and atrocious lies are being broadcasted to attract the unhappy victims to the spider's parlour. *Tea is a preventive of malaria ; it is a safeguard against lungs complaints and so on.* Five years ago when I was in Germany I visited a big Chemical Factory. I was surprised to find the immense quantity of cocaine manufactured ; several other factories including one or two in Japan were doing the same. A fraction of the world's output is not required for *bonâfide* medicinal purposes. In spite of the recent laudable efforts of the League of Nations, illicit manufacture of this deleterious drug as also its smuggling goes on merrily. Capitalism is relentless and knows only how to line its pocket.⁴

Mrs. Hardy, wife of the great novelist and herself a writer of note, in the course of a speech on modern civilization observes :

"To many, civilisation is synonymous with material prosperity. To them the most highly civilised individuals are they who own a motor-car, who are on the telephone, and have facilities for listening nightly to wireless ; they who are able to call to their aid a dozen mechanical inventions for adding to their so-called pleasures and saving their time. This, I take it, is the meaning of civilisation to the majority of people.

"Certainly it would be an act of sacrifice—perhaps an uncalled for act—for any individual to be heroic enough to dispense with all such mechanical aids and devices. Nevertheless

⁴ Cf. "The enormous effort expended to increase human needs artificially in order to maintain unemployment * * * * the increasing amount of human energy which has to be expended in persuading, bullying or intriguing the public to buy the latest products of industrial achievements".—Demant : *op. cit.* p. 135. Sir A. Salter and others also lay stress upon this "artificial stimulation of consumption" and the creation of new wants.—*The Causes of War*, p. 44.

when too highly regarded, they are injurious to the best development of humanity. The great danger of today is that life may become too mechanised in this age of machine.

"While considering the subject of this paper, my thoughts were irresistibly led to the teaching of Gandhi—Mahatma Gandhi, the Indian reformer, or revolutionary, as some might call him. He has a profound disrespect for the achievements of this age of machines, in their effect upon actual human happiness and advancement. His teaching is that the simpler life makes the purer spirit—which is, by the way, remarkably in accord with that of the Sermon on the Mount.

"He is not alone in this. I have heard from the lips of one of the profoundest thinkers of the younger generation the opinion that the only hope for civilisation is a return to a simpler life. He was an Englishman. The two men, so wide apart in their lives and outlook upon life, have yet the same ideal—a selfless purity of life and aim and thought, as complete as that taught by the Leader of Christianity".

Japan also began to imitate the West, with the result that she has become highly imperialistic. She has got her tight grip over Formosa and Korea and now she must needs have Manchuria. All the same world-wide trade slump has overtaken her and she keenly feels the pinch. The Tokyo correspondent of *Englishman* under date Oct. 9, 1931, writes :

"Forty years ago, Japan did not want work, so simple was the form of civilization that had been evolved in the past centuries. The people got along very well on a sweet potato, varied on holidays with rice, but once having been drawn into the maelstrom of the feverish Western industrial civilization, they departed further and further from the simple old practices --and now, they want work. They must work, or they starve. It was not always so."

This chapter was already in proof when my attention was drawn to Norman Angell and Harold Wright's *Can Government Cure Unemployment?* I can almost sum up the substance of this chapter by quoting the following extracts from it:—

"If you go into a certain mountain region of Vermont you may come upon the empty house and buildings of a large farm which has been simply abandoned by its owners. It could be acquired to-day at the cost of the small taxes due upon it. There are many such cases in New England and the Maritime Provinces of Canada. Yet once that abandoned soil supported in relative affluence a large family consisting of the parents, thirteen children, and two "poor relations." It supported them in comfort, though the tools they used to wrest their sustenance from nature were crude and primitive to the point of barbarism compared with the tools available for our use. Where we use steam and electricity, harvesters, tractors, separators, they used human muscle, the yoked oxen, the flail, and the scythe. Yet they were all well fed, well clothed, well housed, well warmed. Want, in the physical sense, was unknown. The farm, much more remote than it is to-day, was practically self-sufficing. *

* * * * *

"* * Why were the twentieth-century generation, with their superior tools, greater power over the forces of nature, and immensely greater productiveness less secure of livelihood—whatever other advantages they might enjoy—than their Vermont forbears with their all but barbaric equipment?

"What had happened was that producer and consumer were no longer one. The producer was no longer his own market, knowing exactly what that market required and would require. Co-ordinations of needs to be supplied and means of supplying them, of jobs needing to be done and workers to do them, which in Vermont had been completely under control, had, by the elaboration of the division of labour, got beyond control. When, in Vermont, wheat or maize was planted and harvested, the family knew, since it was mainly for their own consumption, that their labour would not be wasted; that they could count upon its "sale" (to themselves) at a remunerative "price". But in the Dakotas, when ten years' savings were invested in planting some two or three thousand acres to wheat, with costly machinery to be paid for from the money proceeds,

something happening in Paris or Moscow or Buenos Aires might render the value of the crop less than the sum spent in harvesting and planting it. * * * The equilibrium necessary to ensure the remunerative value of his crops was utterly beyond the twentieth-century farmer's control."—*op. cit.*, pp. 4-7.

It is painful ; but it is a fact that things are going from bad to worse. As an American writer of repute says (1928) :—"We are obtaining more and better industrial equipment only at the price of a heavy investment in unemployment and human misery."

CHAPTER XXIII.

ECONOMIC CONDITION OF RURAL BENGAL IN THE SIXTIES AND ONWARDS.

“For enquiries of this kind are not to be made in the bureaus of great cities; books and papers will not afford the information: a man must travel through the country, or must always remain ignorant, though surrounded by ten thousand volumes”—Arthur Young’s *Travels*, vol. i., p. 317, ed. 1794.

In order to understand fully the significance of the economic conquest of Bengal dealt in a subsequent chapter it is necessary to take a glance at the state of the province in the early sixties of the last century and onwards.

Rice is the staple food in Bengal; even the illiterate labourer, when demanding an increase in his wages, refers to the market price of rice: “Sir, how can I afford to maintain a family of four on two annas a day, seeing that rice sells at one anna per seer?” Indeed when I was a boy, the monthly pay of a labourer was Rs. 3-8-0 to Rs. 4/- and rice used to sell at Rs. 1-8-0 per maund (82 lbs.).¹ The labourers in our district were, in the main, Moslems. They generally had a bigha or more of land on which paddy or vegetables were grown and their womenfolk used to eke out the family income by keeping goats and poultry. Fine brinjals used to sell at 20 for a pice (one farthing). A *punji* (Sanskrit *Punji*—a cluster) of big, (bloated) lobsters numbering nine could easily be bought for

¹ Cf. *Nababi Amal* or the times of the Nababs by K. P. Bandopadhyaya, 2nd edition, p. 539.

Again: “In 1861 paddy sold at one *man* (maund) and at 36 *sirs* (seers) for the rupee, and rice at 26 *sirs* for the rupee. * * * On 30th January, 1875 the price of good rice in Barisal bazar was 17 *sirs* the rupee, and of inferior kinds 21 *sirs* for the rupee”.—Beveridge: *Bakarganj*, p. 300.

one anna (a penny) ; chickens sold at 12 for a rupee ; the market price of pure milk was 32 seers to a rupee. Moreover, almost every family had a cowshed attached to the household as also a Dhenkisala (primitive machine for husking paddy) ; the husk, the bran, the small broken grains—all the by-products had their economic use.

Then again different kinds of pulse either grown on one's own land or purchased for the year's consumption were stored up in big earthen vessels. As for paddy (unhusked rice) not only the gentry but the husbandmen also would regard it as their first duty to garner it in granaries for the year's consumption as also for an additional year as a precaution against failure of crops.

Ghee (clarified butter)—pure and unadulterated, with a provokingly tempting flavour—could be easily had for 8 annas per seer. Adulterated "mill oil", imported in recent times from Calcutta, was unknown to the innocent villagers. Mustard seeds crushed in primitive oil presses operated by bullocks used to yield pure oil, which enters largely into the dietary of the Bengalis, was available in every village. The business in mustard oil was then a monopoly of Kalus by heredity ; the price of oil was about three annas a seer (2 lbs.) ; oil cake was an excellent food for cattle ; it was also used as a manure.

The tending of milch cows was a sort of religious duty with every Hindu. I still remember how my mother used to superintend personally the feeding of the cows of which there were various breeds. It was a rule with my parents that their children should be nourished chiefly on a milk diet till they were five years of age. Even ladies and gentlemen of rank did not disdain to cleanse the cowshed in the early morning and the sweepings constituted an excellent form of farm-yard manure.² The bran, the thin gruel of boiled rice and chips of the stem of *Kadali* (*Musa Sapientum*) were also regularly given to the cows. Then again every village republic had its own

² Cf. Cowper : "The cowdung yields a stercoraceous heap".

pasture land—"the common—"³ where the cattle grazed at random. When the paddy was harvested an abundant supply of straw was also stocked to serve as additional cattle food, especially during the dry season when grass was scarce. In a word, every household was to a certain extent self-contained.

Soap was not then such a common article of toilet as now ; its use was confined to refined society only. For washing purposes *sajimati* (impure carbonate of soda found as a deposit on the soil in certain districts in Upper India) was much in vogue. The poorer classes used to lixiviate the ashes of the leaves of *kadali* and boil their clothes in the solution adding a little lime to increase its causticity. A kind of impure ball soap was made at Dacca ; the process of manufacture being evidently taught by the Portuguese who settled there in the sixteenth century. The Bengali and Hindi name for soap, namely *savan*, is evidently derived from the Portuguese *savon*.

The river-borne trade of Bengal was then carried in country boats of various descriptions, *Kos*, *Balam*, *Sodpuri* ; and the passenger traffic by means of green boats ; *Buzraws* were for well-to-do gentry and *Pansis* and *Tapuris* for ordinary people. Every village of importance had scores of them lying at anchor, discharging cargoes and the *bandars* and *ganjas* (ports and marts) were simply studded with them presenting a brisk and gala appearance. As we made journeys to and from Calcutta in boats of the above description we relished the trips immensely and it was an enjoyable sight to observe fleets

³ In marked contrast with the above the following extract may be cited with advantage as throwing light upon the deterioration of cattle and the consequent milk famine.

"In most districts of Bengal, there is hardly any recognised common pasture ground. Owing to pressure of population, the landlords have settled all available cultivated lands with tenants and these are being fast reclaimed. * * * * In most villages the cattle are let loose on the fields and mango groves or banks of tanks from which they pick up what they can get. Fodder crops are practically unknown and are nowhere grown in Bengal purely as such". Momen's Evidence before *Agr. Com.*, vol. iv, p. 326.

of them progressing either propelled by rowers when the tides were favourable, or spreading their sails when the winds were propitious. All this is now almost a thing of the past, thanks to the inland steamers of the British Companies plying in the big rivers.

Beveridge in his *Bakargunj*, a district contiguous to Khulna, writing in 1876 thus gives the following account of the river boats and their construction :

"Perhaps one of the most skilled crafts in the district is boat-making. This is carried on at Debaikhali and Shampur in the Mendiganj thana where the best *kos* boats are made; at Ghanteswar near Agarpur, where the best *pansways* are made and at Barsakati in the Perozpur thana. At this last place very large cargo-boats are made. A few canoes are hollowed out of kerua wood by the Mugs in the Sundarbans and *dinghis* of sundari wood are made all over the district, but specially at Jhalakati. Kaliganj, Backerganj, Phalagar, are also boat-building places."—*op. cit.* p. 298. Thus, boat-making supported a large class.

In the days of my childhood, I never saw a *Charka* plying in any household ; indeed, Manchester piece-goods had already entered the remotest villages and the *Jolas* and *Tantis* (weaving castes) had practically been driven out of their hereditary profession ; some of them were eking out a miserable existence by selling *bilati* (foreign) piece-goods and others had been driven to the cultivation of patches of land, thus increasing congestion of the soil.

The village blacksmith was then an important personage.⁴

⁴ Lal Behari Dey in his *Bengal Peasant Life* has given a vivid description of the smithy :

"Kuvera, however, and his son Nanda, are busy as in the day ; for their toil knows no intermission except in the dead of night. It is true that the people who frequented their smithy during the day for little jobs are no longer there, but their place has been taken by friends who have come to enjoy an evening chat. But, friends or no friends, the father and son are never unmindful of their own business. Vulcan senior and junior have just taken out of the forge a large piece of iron, glowing and red-hot, have put it on the anvil, and are belabouring it with their hammers and scattering about particles of incandescent matter".

The smithy was a club house in the evenings where village politics were discussed. The smith still made the plough-shares, spades, daos, hinges for doors, big nails, locks, etc. These were of course made of imported iron ingots and sheets. Locks and padlocks were made at Natagoria (a few miles north of Calcutta) and at Domjur, Makardah, Baragechia in the district of Howrah ; but this industry is almost in its death agony, thanks to the cheap imported articles of German make, at present flooding the country ; and Sheffield cutlery also was rapidly making headway ; indeed, razors and pen-knives were already of foreign make.

Next to rice, *gur* and sugar manufacture was the most important industry of Jessore. The date palm was the main source of *gur* (treacle and molasses) and sugar. The following account from Westland's *Jessore* (1871) may prove of interest in view of the impending ruin, nay total collapse, of the sugar industry in Bengal at the present time due to imported sugar from Java.

"Although sugar is manufactured to some extent all over the district (Jessore), the principal sugar country is the western part, which may be considered as included between these places :—Kotchandpur, Chaugacha, Jhinkergacha, Trimohini, Keshabpur, Jessore and Khajura ; and these places are the principal marts for its production and export. There are two chief places to which export is made—to Calcutta and Nalchitti. Nalchitti is a place of great commercial importance in Backerganj ; a sort of central station for the commerce of the eastern districts. The demand there is for "dhalua" (raw sugar) as it is for local consumption ; and except from Kotchandpur itself, almost all the "dhalua" sugar produced in the district finds its way to Nalchitti or to Jalakati, which is near it. Kotchandpur also sends a good deal of "dhalua" sugar there, but most of its produce goes to supply the local demand in Calcutta, as it is favourably situated for land carriage to Calcutta. Calcutta has in fact two demands, namely, a demand for "dhalua" sugar for consumption in Calcutta and other places whither it sends the sugar and a demand for pukka (refined) sugar for export to Europe and other places. This last demand is met by Keshabpur, and by most of the other places in the southern half of the district. The former demand is, as stated, already met by Kotchandpur".

The following account of sugar as manufactured in Bengal about the year 1800 will prove highly interesting :

“A sudden rise in the price of sugar in Great Britain, partly caused by a failure in the crops of the West Indies, and partly by the increasing consumption of this article throughout Europe, was felt as a serious evil by the British nation. Their eyes were turned for relief towards Bengal, and not in vain. An immediate supply was obtained from this country ; and the exportation of sugar from Bengal to Europe, which had commenced a few years earlier, still continues and will, it is hoped, be annually increased to meet the growing demand for it, and to benefit, in common with the West India islands, by the advanced price which it bears in the markets of Europe.

“From Benares to Rangpur, from the borders of Assam to those of Catac, there is scarcely a district in Bengal or its dependent provinces wherein the sugar-cane does not flourish. It thrives most especially in the provinces of Benares, Bihar, Rangpur, Birbhum, Burdwan, and Mednipur ; it is successfully cultivated in all, and there seem to be no other bounds to the possible production of sugar in Bengal than the limits of the demand and consequent vend of it. The growth for home-consumption and for the inland-trade is vast, and it only needs encouragement to equal the demand of Europe also.

“It is cheaply produced and frugally manufactured. Raw sugar, prepared in a mode peculiar to India, but analogous to the process of making muscovado, costs less than five shillings sterling per cwt. An equal quantity of muscovado sugar might be here made at little more than this cost ; whereas, in the British West Indies it cannot be afforded for six times that price. So great a disproportion will cease to appear surprising, when the relative circumstances of the two countries shall have been duly weighed and impartially considered. Agriculture is here conducted with most frugal simplicity. The necessities of life are cheaper in India than in any other commercial country and cheaper in Bengal than in any other province of India. The simplest diet and most scanty clothing suffice to the peasant, and the price of labour is consequently low. Every implement used in tillage is proportionably cheap, and cattle are neither dear to the purchaser, nor expensive to the owner. The preparation of sugar is equally simple and devoid of expense. The manufacture is unencumbered with costly works. His dwelling is a straw-hut ; his machinery and utensils, consist of a mill, constructed on the simplest plan, and a few earthen pots. In short, he requires little capital, and is fully rewarded with an inconsiderable advance on the first value of the cane”. Colebrooke : *Remarks on the Husbandry and Internal Commerce of Bengal*, pp. 78-79.

The above was written a century and a third ago and now Bengal, which once supplied sugar to the world market, depends upon Java for its supply. The improved and scientific methods of agriculture have enabled Cuba and Java to flood the world market with sugar at a ridiculously low price. At present (1928-29) India exports from Java 15 to 16 crores worth of sugar, the major portion of which is consumed in Bengal.

Jute is now the most important crop of Bengal, especially of North and East Bengal. But in the sixties it was grown only in small quantities in the district of Jessore, just enough to supply the ordinary needs of the household, such as making ropes and gunny bags; and for this purpose hand-spinning was much in vogue. It was undertaken by the male members of even genteel families during spare moments. The market price of jute was Rs. 1-4-0 per maund. But a great revolution has been effected in the economy of rural Bengal by the ever-increasing cultivation of jute.

In certain districts of North Bengal (e.g. Rungpur) "the spinning and weaving of jute by hand was extensively practised for cordage and cloth for bedding, screens, garments of the poorer classes and many other domestic purposes. * * * In the early forties the cloth came to be exported from Calcutta to North America and the Bombay coast for cotton-packing but more extensively as bags for exporting sugar and other produce to all parts of the world".

Dr. Forbes Royle in his admirable work, *Fibrous Plants of India*, published in 1855, quotes from a Calcutta merchant named Henley, the following vivid picture of the native industry and the importance it had then acquired in supplying markets outside of India with hand-loom gunny cloth and bags:—

"The great trade and principal employment of jute is for the manufacture of gunny *chuts* or *chuttees*, i.e., lengths suitable for making bags. This industry forms the grand domestic manufacture of all the populous eastern districts of Lower Bengal. It pervades all classes, and penetrates into every household. Men, women and children

find occupation therein. Boatmen in their spare moments, husbandmen, palankeen-carriers and domestic servants; everybody in fact, being Hindus—for Mussalmans spin cotton only—pass their leisure moments, distaff in hand, spinning gunny twists.

"Its preparation, together with the weaving into lengths, forms the never-failing resource of that most humble, patient, and despised of created beings, the Hindu widow, saved by law from the pyre, but condemned by opinion and custom for the remainder of her days, literally to sackcloth and ashes, and the lowest domestic drudgery in the very household, where once, perhaps, her will was law. This manufacture spares her from being a charge on her family—she can always earn her bread. Amongst these causes will be discerned the very low prices at which gunny manufactures are produced in Bengal, and which have attracted the demand of the whole commercial world. There is, perhaps, no other article so universally diffused over the globe as the Indian gunny bag." Wallace: *The Romance of Jute*, 2nd ed., pp. 2-3.

It will thus be seen that hand-woven jute was an important subsidiary industry. In 1850-51 gunny bags and cloth exported from Calcutta were valued at Rs. 2,159,782/-.

Owing to the miserable failure of the Bengalis in commercial pursuits and in business in general the huge profits from this agricultural produce, which now ranks only next to rice in Bengal, accrue to mill-owners, middlemen and speculators, belonging chiefly to the European, Armenian and Marwari communities.⁵ An unwary foreign reader, at the first glance, may run away with the idea that the middleman's huge profit made from jute finds its way into the pockets of the Bengali. Nothing is farther from the fact. The managing agents of the jute-mills with the exception of 2 or 3 are all British firms, who enjoy the lion's share. It is again sometimes urged that the majority of the shareholders of the jute-mills are Indians. They are "Indians", no doubt, but practically non-Bengalis. It would however be idle to deny that a considerable portion of the money realised by the sale of jute finds its way into the pockets of the cultivators them-

⁵ From enquiries made it appears that at least 25 per cent. of the ultimate price of jute, that is about 12½ crores, goes to the pockets of the interminable series of middlemen who infest the jute trade.

selves and this is borne out by indirect evidence, which cannot be lightly disposed of. Land, which was formerly exclusively used for sowing paddy, is now largely cultivated for the jute crop in the districts of Tippera, Mymensingh, Dacca, Pabna, Faridpur, etc., and every available acre is now eagerly sought for, for this purpose. This has unfortunately proved disastrous for cattle and supply of milk.

The economic effect of jute cultivation on the peasantry of Bengal is graphically described by Panandikar in his *Wealth and Welfare of the Bengal Delta*, a work which shows close study and observation :—

“The large increase in the area under jute and the opening of the world markets to the products of the delta, would have been an unmixed blessing to the people if they had been prudent and had utilised their profits in paying off their debts, and in improving their holdings, means of communication and standard of comfort. Their standard of comfort has no doubt increased a little, but a large part of the profits has been wasted away in litigation, in extravagance and in hiring outside labour unnecessarily. The profits have tended to make the cultivators gentlemen of leisure, wasting away their time in idleness. They have given up doing their own earth-work, cutting their own paddy and jute, steeping jute and handling and carrying away their own harvest and have been hiring for these purposes outside labour, mostly from Bihar and the United Provinces. This has increased considerably the demand for labour, and its wages, and the high cost of the labour, which formerly they used to perform themselves, has naturally increased the cost of cultivation to a substantial extent. A large part of the profits of the cultivators, thus, have disappeared into the hands of lawyers [due to litigation] and up-country labourers. Although the prices of the staples of export have now declined temporarily owing to general trade-depression, *the habits of idleness, once formed*, cannot easily be given up, and outside labour continues to be employed on a large scale. Had it not been for this increase in the cost of cultivation, the profits of the cultivators would have been larger than what they are at present, in spite of the fall in the prices of the staples”.⁶ *Op. cit.* p. 150.

It has been estimated that the total annual output of jute, based upon five years' average, is nearly four crores and

⁶ As regards “habits of idleness”, cf. *ante* Renan, p. 374.

seventy five lakhs of maunds, which is exactly the population of Bengal. Hence it comes to one maund per head of population or rupees eight at the current price per year.⁷ In this connection I desire to quote the observation that Sir D. M. Hamilton made in the course of one of his speeches in Calcutta in 1918. He said:—

“As the holder of a few jute mill shares I feel ashamed to look a jute grower in the face. That we should be raking in 100 per cent. dividends while he is on his beam ends for want of a banking organisation to tide him over his evil day, does not tally with British ideas of fair play. It hardly seems playing the game, and it “*maun press unco sair*” on the Dundee conscience. But what the jute growers are suffering from now is what the masses of India more or less suffer from, the day they take up life’s burden till the day they lay it down. It is a condition of things that can be tolerated no longer, and it is not a credit to British rule that it has been tolerated so long. To expect that the people of India will ever be able to develop either their bodies or their souls when burdened with a 100 per cent. finance and tied to a millstone of debt is folly”.

The phenomenal high price of jute in 1925-26 has, however, been followed by two successive years of abnormally low prices, with the result that the producers of jute have been hard hit. As jute has more or less supplanted the cultivation of rice, the peasants of East Bengal have to buy their food-stuff with money borrowed at usurious rates of interest varying from 25 to 37½%, their proverbial improvidence and thriftlessness not having taught them to provide against lean years.⁸ Then again it has upset the mental equilibrium of the peasantry, at least in East Bengal. The result has been that Sealdah goods-sheds as also the steamer-station at Jagannath Ghat (on

⁷ At present (June, 1932) jute is selling in the countryside at the ridiculously low price of Rs. 2-8-0 per maund.

⁸ Cf. “Generally speaking the ryot seems unable to save money even when he has the opportunity of doing so. In 1925, for instance, when jute prices were high and he had a chance of freeing himself from his debts, he did not take advantage of his opportunity but spent all the money he received”—*Royal Com. on Agr.*, vol. iv, p. 415. Indian Jute Mills Association Evidence.

the Strand) are choked with such articles as corrugated iron sheets, bicycles, gramophones, bales of piece-goods, shirtings, etc. The craze of the rustic for buying gaudy trinkets and gewgaws and gadgets knows no bounds and Japanese as also artificial silk *chadars* priced at Rs. 7/- each, which our middle class *Bhadralok* cannot dream of buying as too expensive an article of luxury, have flooded the market and are finding ready purchasers among the peasantry. Like children they jump at any tawdry that has an air of novelty. Electric torches of German make are having an extensive run even in the remote villages. Not knowing how to use them properly they throw them away as soon as the batteries inside are exhausted.

The peasantry as a class are steeped in utter ignorance ; their outlook, if they have such a thing at all, is very narrow ; in one respect they follow the precept of Christ "Let to-morrow take care of itself". They are proverbially improvident. They feel uncomfortable so long as they cannot get rid of their surplus stock of rice. The sight of the coveted *Bilati* articles enumerated above excite their eagerness to buy them. As the *Bepari* (dealer in jute, rice etc.) is always at hand, jingling cash in the purse, they cannot resist the temptation of parting with the produce of their fields. It often happens that in their craze for the purchase of these tempting stuffs, they even denude their granaries. Formerly as said above it was an article of faith with our husbandmen to keep in reserve at least a year's stock of food-grains over and above that required for the current year's consumption, in case there might be a failure of crop ; at present, I doubt very much if five per cent. of the peasants of Bengal have the foresight or the capacity to lay by the year's provisions for their families ; the rest are hopelessly involved in debt. They are in perpetual and chronic indebtedness both to the *Mahajan* (money-lender) and to the zemindar.

My account of village life in Bengal sixty years ago would not be of much value unless it is supplemented by a survey

of the rural life at the present day. Having travelled extensively in North, West and East Bengal during the last few years in response to the national upheaval of 1921-25 and in connection with the famine and flood relief operations in Khulna, Rajshahi and Bogra, I have had ample opportunity of studying at firsthand the present economic condition of Bengal.

Almost all the navigable rivers of East Bengal are now constantly ploughed by mail-steamers or Sunderban and Assam despatches carrying mails, passengers and immense loads of cargo ; there are also in many places railway services in connection with these. From Dacca or Barisal or Chittagong to Calcutta, the journey by boat often occupied a fortnight or more, whereas cargo boats took much longer time. Now-a-days these places are within easy reach. One can travel from Calcutta to Chittagong in 24 hours and to Dacca in 16 hours. A student of Economics not conversant with the deeper undercurrent of life in rural Bengal would exultingly cite the export and import trade returns as supplied by the Custom House and congratulate the province on its prosperous condition, forgetting all the while that there is a skeleton concealed in the cupboard.

In fact, our rulers are never tired of quoting figures in support of the continued prosperity of the people under British regime. It is often a shibboleth with the political economists that when—thanks to the easy and rapid means of transport and locomotion—people can secure higher prices for their commodities, they are bound to get richer. Thus they hold that the surplus produce of the soil can now be sold at an advantage.

As against this it is enough to quote here Darling—a high authority—who says :—“What is easily gained is easily spent ; consequently a great part of his (cultivator’s) new wealth has slipped through his fingers into the pockets of others. In

thirty years debt has increased by fifty crores, and is still increasing".—*The Punjab Peasant*, p. 283.

Memon also says the same thing about the ever-increasing poverty of our peasantry inspite of their increased income :—

"It is a fact that 50 years ago, although ill-housed and ill-clad, the ryots of Jessore had no difficulty in getting two full meals, and though their income was small, their expenditure was less. They used to grow enough food-crops for their subsistence and did not care so much for ready money, to buy cheap luxuries as is the case now-a-days. Their income has now increased, but this increase is only nominal and not real, as 50 per cent. of them, who cannot sell any paddy at all except for the bare necessities of life, do not get any benefit from the rise in prices of crops. On the other hand, they have got a higher standard of living and in consequence their expenditure has increased, and not being able to meet their wants with their income, they are gradually getting more and more into debt."—*Rep. Agr. Comm.*, iv, p. 328.

Mr. Darling estimates the total agricultural indebtedness of India at 600 crores of rupees. According to the Report of the Bengal Provincial Banking Enquiry Committee (1930-31) the rural indebtedness in Bengal alone amounts to Rs. 93 crores. The following extract from it will amply repay perusal.

"The moneylenders' rates of interest range from 5½ per cent. to 300 per cent. The rates vary with the nature of the security and the amount of the loans and depend to some extent on the supply of loanable capital.

"Most of the loans bear compound interest and the usual rates are after 6 or 12 months. In some cases, the loans are compounded after 3 months.

"Usury is widely prevalent in every district in the province. This is due to various causes such as the low credit position of the borrower, the absence of suitable financing agencies, limited resources of the money-lenders, insufficiency of accommodation provided by co-operative societies and loan offices, and the predominance of tradition and custom among the borrowers, particularly in the backward places."

Much has been said about the improved transport system. That it has not been an unmixed blessing to the poor peasantry is proved beyond doubt. As Mr. Ramsay Macdonald says :—

"Railways have added to the difficulty and have widened the apparent famine area, * * * * * one firm alone sucks the sap of Indian life like a tropical sun, leaving dust and barrenness behind. * * * * A

week or two after harvest India's surplus wheat and rice have passed into the hands of dealers and when the next monsoon fails she starves."—*Awakening of India*, p. 165.

This is exactly what Mr. Horace Bell, once Consulting Engineer to the Government of India for State Railways, said in a paper read before the Society of Arts in 1901. As early as 1878 Sir George Campbell also pointed out :—

"Improved communications lead to the export of grain and a cessation of the old native habit of hoarding grain, which was formerly a very great security against famine." Twenty years later, the Famine Commission of 1898 formally endorsed the same proposition, stating that "the export trade and the general improvement in the means of communication have tended to diminish the custom of storing grain, as a protection against failure of harvest, which used to be general among the agricultural classes."

It is thus evident that *famine in India has not been prevented by railways* and a system of railways, without collateral safeguards, cannot be an unmixed good, though a certain school of officials is never tired of repeating parrot-like that railway communication has made famine a thing of the past.⁹

Mr. Ramsay Macdonald is right in saying that railways have widened the famine area. Again formerly owing to the difficulties of communication the ryots and the villagers in general were contented with the rude and patriarchal justice which was locally dispensed. Now they avail themselves of railways, motor buses, and fast-going steamers to rush to subdivisions and district towns for purpose of litigation ; in Bengal, dozens of light railways and connecting steamer services wax fat at the expense of the litigants. Improved means of transport has thus conferred an additional blessing on the ryot !

It is indeed deplorable that the life and exuberance of

⁹ In the official version, however, railways have banished famine !

Cf. "Fortunately one of the grimmest of spectres, which formerly dogged the Indian agriculturist's footsteps, has now been laid. Famine is no longer the dread menace which it used to be—the railways, canals, and the greater ubiquity and resources generally of the Indian Government have seen to that."—Coatman : "*India in 1926-27*."

spirits that were abundantly found in the good old days have now disappeared from our village life. There was then joy of existence in our village-folks, such as is seen in birds and fishes. Young people used to participate in national games. On the occasion of the celebration of *Janmashdami* (birthday of Srikrishna), wrestling matches were held in which athletes took part. The *Amrita Bazar Patrika*, evidently with a vivid recollection of those days, thus graphically narrates the condition of a typical village :—

“Malaria, cholera and kalazar did not then work havoc on the countryside. Poverty, the causes of which are well known, did not make men emaciated or devoid of cheer and vitality. Young men almost from their cradle were not then made to groan under a heavy weight of books mostly written in a foreign tongue and a system of examinations conducted on lines that are anything but rational. There were *Akras* (Gymnasiums) in almost every village where men regularly practised wrestling, lathi play, sword play and archery, and learned various other feats of physical exercise; on at least two occasions every year, the Muharrum and Durga Puja, there were organised displays of physical strength. And men and women took the most intense delight in witnessing these performances. Our well-to-do countrymen now feel a special pleasure in spending their money on motor cars and dogs of foreign breed. But then the practice was quite different. The rich amongst the people considered it their duty to maintain good wrestlers and accomplished musicians. No wonder then that the arts of music and wrestling flourished in the important centres of wealth in those days; and musicians and wrestlers were looked upon with love and respect by the people.”

“All these conditions are now unfortunately altered. Except in the Punjab and parts of the United Provinces *Patwans* are now neither found in large numbers nor treated with much consideration. The situation is especially bad in Bengal where there prevails a general impression that persons who practise lathi play are no better than “Goondas” while those who do “Don Baitak” and “Kusti” belong to the class of *Durwans*. It is thus only natural that the average people of the country should become so many weaklings, at the mercy of the first bully who takes it into his head to trespass on their right to person or to property.”

Amongst our tenantry of the fishermen class, there used

to be one or two *Malkats*¹⁰ and an open challenge was thrown to all and sundry to come and try their strength in lifting them up to a certain height. Every village could boast of at least one such Hercules who gave proof of his strength. On the approach of the spring and during the *Charak* festivals *Jatra*¹¹ parties were organised and any one with a modicum of musical talent was quite welcome to join them ; distinction of caste and creed seemed to be forgotten for a while. I well remember how un-lettered Moslem peasants were often requisitioned for the purpose. My father, himself an expert violinist, used on such occasions to extend his invitation to some select players ; those who in his judgment acquitted themselves creditably were allowed seats of honour in his drawing room where they displayed their skill ; and even now I can almost hear the rapturous notes of the strings. From time immemorial there used to be held, literally, as the Bengali saying goes, thirteen festivals in twelve months, and the celebrations of the great national festival—Durga Puja—are still vivid in my memory. What a thrilling sensation we felt as the days of the festival were drawing near ! Enormous quantities of sweets were prepared and lavishly distributed especially among our tenantry during the three days of the Puja and guests were fed sumptuously. Performances by the *Jatra* parties were held at night—theatres had not yet come into existence in the remote villages. The regattas in connection with the immersion ceremony were equally exciting and it was with a heavy heart and sad countenance that we returned home after the function. The poet born on the Kapatakshi must have had such feelings when he vented them in these memorable lines :

¹⁰ Mallakastha (Sansk.)—A portion of the trunk of a tree sawn off with a handle driven into its middle.

¹¹ Regarding "The Jstras" or the popular theatrical performances of Bengal the curious reader may consult a brochure by Nishikanta Chattopadhyaya, London (1882).

“विस्मयिणीया प्रतिमा येन दशमैर दिने ।” Oh ! what a havoc time works in our mind ! I feel with Wordsworth :—

There was a time when meadow, grove, and stream
The earth, and every common sight,
 To me did seem
Apparelled in celestial light,
The glory and the freshness of a dream.

It is not now as it has been of yore ;—
 Turn wheresoe'er I may,
 By night or day,
The things which I have seen I now can see no more !

* * * *

Whither is fled the visionary gleam ?
Where is it now, the glory and the dream ?

CHAPTER XXIV.

ECONOMIC CONDITION OF THREE BENGAL DISTRICTS.

It would not only be tedious but out of place here if in studying the economic condition of rural Bengal I were to go into a detailed account of every one of the 28 districts of Bengal. I have therefore selected three representative districts—one in West Bengal (Bankura), one in East Bengal (Faridpur), and the other in North Bengal (Rungpur).

I. BANKURA UNDER BRITISH RULE OR THE RUIN OF A BENGAL DISTRICT.

Excavation of tanks and cutting of canals for internal communications and erection of reservoirs for the storage of water for use during seasons of draught were a regular and recognised feature under the Hindu and Mahomedan rule. But with the establishment of British power in Bengal this vital factor in the economy and health of its people began to disappear. Colebrooke, writing forty years after the Battle of Plassey, observes, “reservoirs, ponds and water courses, dikes more generally in a progress of decay than improvement”. This point may be well illustrated by studying the condition of Bankura from 1770 onwards.

The great famine of 1769-70 which swept away one-third of the population of Bengal spent its fury markedly on Bankura and its adjoining district Birbhum, which had already suffered heavily during the Marhatta depredations. Language fails to describe the horror it brought in its trail. “The ancient houses of Bengal, who had enjoyed a semi-independence under the Moguls and whom the British Government subsequently acknowledged as the lords of the soil fared worse. From the year 1770 the ruin of two-thirds of the old aristocracy of Lower Bengal dates,”¹ and yet the land revenue was exacted

¹ Hunter : *Annals of Rural Bengal*, p. 61.

from the Zemindars and revenue farmers to the uttermost farthing. Lord Cornwallis after visiting some of the desolate lands pronounced in 1789: "The land remained untilled, * * * * one-third of the Company's territories in Bengal to be a jungle inhabited only by wild beasts".²

It is on record that the Rajah of Birbhum was hardly permitted to pass the first year of his majority before being confined for arrears of revenue and the venerable Rajah of Bishnupur (Bankura), after weary years of duress, was let out of prison only to die.

Nor was this all. The Rajah of Bishnupur's descendants were gradually ruined and impoverished and the vast territories over which their ancestors once ruled with almost sovereign powers were one by one lopped off or sequestered and made over to new revenue farmers. In 1806 a considerable portion of it was purchased by the Maharaja of Burdwan. He in turn under Regulation VIII of 1819, enacted for his special benefit, granted 341 *Patnitaluks* (leases) fixing the rent in perpetuity at his discretion. The holders of the *Patnitaluks* called *Patnidars* again sub-let them in turn to under-tenureholders of third degree (*darpatnidars*) and so on. The system which thus came into vogue has been the direful spring of woes unnumbered for Bankura as also in a lesser degree for other districts in Bengal.

The resident Rajah of Bishnupur held perpetual sway over his own tenantry. He constructed thousands of *bunds* in which the abundant, superfluous water of the monsoon season was stored up for use during the months or seasons of draught. Under the Permanent Settlement, the East India Company was converted into the greatest of absentee landlords ever seen in

² "In the 18th century the family rapidly declined; the Marhattas impoverished them; the famine of 1770 left their kingdom empty of inhabitants; and the English treating these tributary princes as mere land-stewards, added to their public burdens at pleasure, and completed their ruin".—Hunter: *op. cit.* p. 446.

the world, with its proprietors or shareholders assured of the land revenue under the "Sun Set Law". The Zemindars under the Company were again assured of their share of the revenue from their under-tenure holders. It is said that everybody's business is nobody's business ; so the arrangements for irrigation constructed with admirable skill, wisdom and foresight were doomed to neglect.

Mr. G. S. Dutt, who as Magistrate and Collector of Bankura, tried his best to repair some of these old *bunds* with the help of locally started Co-operative Societies, says :—

"The story of rural decay in Western Bengal is intimately bound up with the story of the decay of its irrigation tanks and *bunds*. Visit any district in Western Bengal and you will be impressed with the wisdom with which, to counteract the vagaries of rainfall and to conserve every precious drop of water falling from the sky or trickling down the soil, a past generation of benevolent landlords had provided the districts with a network of reservoirs for the storage of water of the monsoon rain and of the sub-soil drainage. * * * * * Nowhere was the system of irrigation tanks and *bunds* constructed with such systematic thoroughness and farseeing wisdom as one done in Bankura and the other parts of Western Bengal covered by the old land of Mallabhum by its old benevolent landlords and by the Raja of Bishnupur who ruled over it. Nowhere again has the narrow selfishness, folly and suicidal blindness of subsequent generations conspired to bring this elaborate system of tanks and *bunds* on which the health, prosperity and the very life of the population depends, into such utter decay and destruction. * * * * * The larger *bunds* were supplied with inlet channels for the reception of the water of their catchment areas and with an elaborate and carefully worked out system of distributaries for serving the water to the lands protected by them. These tanks and *bunds*

not only supplied water to the field but furnished a sure and adequate supply of drinking water to men and cattle.

“Subsequent generations have proved themselves false to this rich heritage bequeathed to their health and agricultural prosperity. For year after year and decade after decade these precious reservoirs have been allowed to become silted up and converted into dry land and half-dry pools of stagnant dirty fluid ; their embankments have been allowed to fall into decay”.

Then again in another place Mr. Dutt writes :—

“As a result Bankura to-day is a district of dead tanks, and large *bunds* which have either completely vanished out of recognition or of which only a fragment of an embankment here and there remains to indicate the evidence of their previous existence, or of their shrunk and mutilated remains in the form of shallow silted up pools of water.

“Thus, surprising as it may seem, comes the irresistible conclusion that in the district of Bankura famine and poverty, disease and crop failure, malaria and leprosy are all alike the direct consequences of the neglect, apathy and inaction which has allowed the old tanks and *bunds* of the district, numbering 30,000 to 40,000 on a moderate calculation, to fall into disrepair and decay”.

Bengal being a permanently settled province, the Government is assured of the fixed land revenue and there is no chance of its being enhanced on account of the increased yield of the soil due to irrigation and hence it has been relegated to criminal neglect. The welfare and prosperity of the people do not count a feather's weight in the scale in the scheme of our beneficent Government. In marked contrast with this policy of *laissez-faire* is the policy of over-activity in this respect in the arid region of Sind. The Sukkur Barrage project which will irrigate a vast area is calculated to cost 20 crores. No doubt the scheme is expected to make an appreciable addition to the production of food supply (notably wheat), but

the policy underlying this colossal project is evidently the consideration that the new area to be brought under cultivation is eminently fitted for the cultivation of long-stapled cotton. Lancashire is anxious to be independent of America in this respect hence the tight grip over Sudan and the enormous expenditure of the Indian Tax payers' hard-earned money. Here again Imperial considerations play a prominent part.

No one for a moment would maintain that the British Government has maliciously or of set purpose brought about the ruin of this fair district ; but my contention is that its *laissez-faire* policy is responsible for it. Mr. Dutt's diagnosis stops short at the root cause ; as a bureaucrat he naturally fails to place his finger on the right spot.

Our economic decadence has everywhere synchronised with British connection—with painful, unerring and fatal precision the ruin of this fair district has followed in the wake of the "White man's burden", like the withering blast that accompanies the flapping of a revengeful angel's wings. The connection between cause and effect can here be proved to demonstration.

Mr. Dutt quotes the following glowing account of what co-operation has done in America :—

"Harold Powell, writing on co-operation in Agriculture, remarks on the striking fact that in the United States of America in 1919, of the total area of irrigated land, viz., nearly 14 million acres, no less than one-third was under co-operative enterprises and he goes on to observe : 'I believe it is safe to say that in no other industry in the United States is there so large a percentage of co-operation as in irrigation.' It is an interesting feature of co-operative irrigation in America full of rich significance to the people of the arid regions of Western Bengal and other parts of India that co-operative irrigation in America had its origin in the development of the arid wastes of the country of Utah which were more devoid of water than are the plateaus of Western Bengal or Behar to-day."

“It may be said that co-operation is the keystone of the development of Utah. The success which attended this form of organisation of water from streams spread to other industries. This is shown in the co-operative creameries, co-operative canneries and co-operative stores that abound in the State”.

Mr. Dutt eloquently appeals to the inhabitants of Bankura to follow in the wake of the Utah colonists but he fails to lay his finger on the plague spot and reveals himself as an official of the deepest dye. He conveniently forgets that the colonists of Utah belong to the Anglo-Saxon stock amongst whom from the days of the Witenagemot the principle of self-government and self-reliance as also individualism had been fairly rooted. In India, on the other hand, whatever germ there was of self-help was destroyed when the old structure of village community was made short work of under the foreign regime.

I have laid above the misfortune and calamity of Bankura at the door of the permanent settlement with its interminable series of under-tenures. After the above was written I have come across the following passage in Sir W. Willcock's diagnosis of the situation :

“The permanent settlement of your land taxes, meant for the good of the peasantry, broke down your inherited power of co-operation, and the delicate machinery of your irrigation system stopped working and poverty and malaria took its place.—*The Restoration of the Ancient Irrigation of Bengal*, p. 24.

Again, this high authority says :—

“Bengal has poured millions upon millions of money into the common treasury of the whole of India, and, all this while, these two sub-provinces, between which has lain the seat of Government for 150 years, have become poorer and more unhealthy. True is the Indian saying that ‘there is no darkness like that under the lamp’.”

The necessity of irrigation and of providing the people of this country with cheap and abundant water was fully recognized by our Mahomedan rulers to whom another English writer has referred in the following terms :—

“Will the unprejudiced historian deny that the Afghan Sovereign of that day (i.e. of the 14th century) was wiser in his generation, more philanthropical in his principles, more liberal in his plans and labours and more worthy of the love of his subjects and of the blessings of their children’s children, than the body of the merchant princes, who satisfied with self-praise, have viewed with apathy, if not aversion, all plans for the improvement of India, and watched without shame the gradual decay of those wondrous monuments of industry and civilization, over whose destruction even time still lingers, that provided water for a parched up land, and converted arid wastes into some of the noblest provinces of the world. * * *

* * * * *

Those who carefully and without prejudice will examine the present condition of public works in India must acknowledge that the millions of India have more reason to bless the period of 39 years passed under the Afghan Feroze, than the century wasted under the vaunted influence of the Honourable East India Company’s rule.”—Quoted by B. D. Basu, *Welfare*, June 15, 1929.

Then again we find in a Government document :

“The Sultan, perceiving that there was a great scarcity of water, resolved in his munificence to bring a supply of water to the cities of Hissar Firoza and Fath-abad. He accordingly conducted two streams (jui) into the city from two rivers ; one from the Jumna, the other from the Sutlej. That from the Jumna was called Rajiwah, and the other Alaghkhani. Both these streams

were conducted through the vicinity of Karnal, and after a length of about eighty kos, discharged their waters by one channel into the town of (Hissar) Previous to this time the spring harvest failed, because wheat would not grow without water. After the canals had been dug, both harvests came to maturity. . . . Numerous water courses were brought into these places, and an extent of from eighty to ninety kos in these districts was brought under cultivation.³

“The Rohtak canal derives its origin from the first attempt of Ali Mardan Khan to divert water from the old channel constructed for the irrigation of the hunting ground of Hissar Firoza (Firozabad) to the city of Delhi, which occurred about 1643 A. D. seeking to avail himself of the former line as far as possible, the great engineer took his canal out of that dug 250 years before him at Joshi and followed the natural depression of Nai *nadi* Gohana.”
Rohtak District Gazetteer, 1884, p. 3.

The above almost reads like a romance. Verily, our enlightened Government which boasts of engineers trained at Cooper's Hill and latterly at the British Universities' Faculties of Engineering has yet much to learn from Mahomedan rulers of the 14th century.

So much for irrigation. Now the cup of misery of this doomed district has been filled to the brim. The reeling of thread from cocoons as also weaving it into cloth of various descriptions found occupation for thousands; the brass and bell-metal industry, again, also gave employment to a numerous

³ Cf. also: “In the summer in Lombardy rain is rare beyond the lower Alps, but a system of irrigation unsurpassed in Europe, and dating from the middle ages, prevails, so that a failure of the crops is hardly possible”.

class of *Kansaris*. Both the industries are now on the point of extinction.

Silk cloth industry is perhaps the most prominent industry in the District of Bankura. Hundreds of families live upon the earnings of silk looms. Red, yellow, blue, violet and green silk sarees and marriage 'jors' are manufactured by the weavers of Bishnupur, Sonamukhy and Birsingha. These silk clothes are sent out to various places of India by the local Mahajans. These sarees and 'jors' are largely used by the middle class people on the occasion of marriages. Five or six years ago each family of weavers used to earn from Rs. 2 to Rs. 3 per day in one loom. A few months after the British Empire Exhibition the price of the Bishnupur silk cloth began to decline. The price of the raw-materials such as silk thread, *jari*, etc. remained as before. The price of silk clothes went on declining till it has come down to such a low level that the weavers have been compelled in many cases to give up weaving clothes.

"So far no earnest effort has been made either by the leading people or the Government to enquire into the real cause of such a disastrous condition. Bishnupur is an industrial town. The bulk of the population of this town are weavers, black-smiths and *sankaries*. The weavers are extremely distressed and the black-smiths have also been badly hit.

"The brass industry is extremely dull. It is said that the decline of this industry is due to the import of aluminium and enamel utensils ; this industry has no chance of further revival.

"The old town of Bishnupur being thus deprived of two primary industries has become miserably poor and the people who have been affected are gradually leaving this place and going to some other towns. Seventy per cent.

of the population of the town are suffering from the decline of her trade.”⁴

II. FARIDPUR—FOOD DEFICIT IN BENGAL.

I have given above the condition of a district that is arid and parched up except during the monsoon season and where the monsoon rains often fail. In marked contrast with it I shall now present a district in the deltaic region, which is especially favoured by Nature ; where during the annual inundations a deposit of silt takes place, which serves as rich fertiliser. There is another valid reason for choosing Faridpur for our study as I have travelled in this district on several occasions and have come to close quarters with the condition of the people. One important fact should be borne in mind, namely, that throughout Bengal agricultural produce is the only source of income ; the secondary or subsidiary occupations, which up till the seventies of the last century, used to find employment for a large section of the community, are now practically all gone. Weaving is fast disappearing, and big country boats, which formerly were the main vehicles for river-carriage, have been supplanted by steamers of foreign companies. The weavers (chiefly *jolas*) and boatmen having had their bread snatched away from their mouths have taken to the land, thus increasing the pressure on it.⁵

⁴ *Vide* Correspondence, *A. B. Patrika*, July 5, 1928.

⁵ “Weaving, which used to be a vigorous industry has been killed partly by the importing of foreign factory-made cotton goods.” Jack : *The Economic Life of a Bengal District*, p. 82.

Also : “The district is well served by steamers, which ply along the great boundary rivers, the Padma, Meghna and Madhumati, and also along some of the interior rivers.” O'Malley : *Faridpur* (1925), p. 83.

“Fishing supports 47,000 persons, a figure which includes those returned as fish vendors as well as those who catch fish. * * * * * The great bulk of the district trade is in agricultural produce.”—*op. cit.*, pp. 78-79.

Below is presented in a tabular form the total agricultural wealth of the district as compiled from the latest reports :

AGRICULTURAL WEALTH OF FARIDPUR.⁶

Name of crop.	Area of land in acres.	Outturn per acre md. s. ch.	Total out- turn in mds.	Rate per md. Rs. a.	Total price Rs.
Autumn Rice	... 2,39,300	10 30 0	2,572,475	6 13	1,75,24,985
Winter Rice	... 7,59,900	12 20 0	9,498,750	7 4	6,88,65,937
Boro Rice	... 14,400	14 0 0	201,600	4 0	8,06,400
Wheat	... 2,700	8 30 0	23,625	4 14	1,15,171
Barley	... 11,700	10 30 0	125,775	3 6	4,24,490
Millet	... <i>nil.</i>	.....	.....	.....	.....
Bazra	... <i>nil.</i>	.....	.....	.....	.....
Maize	... <i>nil.</i>	.....	.....	.....	.....
Gram	... 3,500	9 30 0	34,125	4 8	1,53,562
Pulses	... 1,01,200	10 30 0	1,087,900	4 0	43,51,600
Linseed	... 6,000	5 30 0	34,500	7 0	2,41,500
Sesame	... 11,200	6 0 0	67,200	6 0	4,03,200
Rape & Mustard	... 24,600	6 0 0	147,600	7 2	10,51,650
Spices	... 28,300	.....	per acre	25 0	7,07,500
Gur	... 7,400	37 0 0	273,800	9 7	25,83,987
Jute	... 2,11,700	16 10 10	3,422,262	9 6	3,20,83,713
Cotton	... <i>nil.</i>	.....	.....	.....	.....
Tobacco	... 4,400	6 0 0	26,400	18 0	4,90,050
Fruits & Vegetables	62,200	.....	per acre	15 0	9,33,000
			Total	... Rs.	13,07,36,745

It will be seen from the above table that the average annual income of Faridpur works out at Rs. 57 to 58, population being 22½ lakhs. Jack and O'Malley, taking all classes together, calculate the average income per head at Rs. 52/- the average debt at Rs. 11/-, and the average taxation at

⁶ The calculation is based upon the average of five years' prices current, *i.e.*, from 1924-25 to 1928-29.

I avail myself of this opportunity to express my cordial thanks to Mr. Devendra Nath Mitra, Agricultural Officer in charge of Faridpur Farm. He has with unflinching courtesy assisted me with necessary information on agricultural products. The above table, in fact, was drawn up by him at my request.

Rs. $2\frac{3}{4}$.⁷ According to Jack, the population engaged in industry amounts altogether only to 8 per cent. of the total, and of this small proportion not one in three could by any stretching of the term be described as skilled. The great majority of unskilled labourers work as porters, or on earth-work on the roads or the numerous ponds. They earn good money, at busy times as much as one rupee a day and generally between 15 and 20 rupees a month. But the "busy" times consist of barely 2 months a year. It is only during the sowing and harvesting of crops that there is a demand of labour. It is true that a few clerks or lawyers belonging generally to the *Bhadralog* class earn some extra money, but they are generally non-resident. On the other hand, the owners of the large estates are absentees and the income amounting to several lakhs is drained away to Calcutta.⁸ It will also be seen that Faridpur is a district which is not self-supporting as far as its staple food-crop is concerned. This in itself is not a matter for serious reflection. In fact, as far as the jute-producing districts are concerned, it may be even a healthy sign because with the aid of their surplus wealth they can well afford to buy rice from Bakarganj, Khulna, etc. But when we take into consideration the total yield of rice in Bengal, the astounding fact stares us in the face that this province, which is supposed to be one of the richest in India, suffers from food-deficit. Thus the total outturn of rice (husked paddy), amounts to 277,376,702 mds. According to the Famine Commission's Report, 7 mds.

⁷ As the five years (1924-29) represent the high water-mark in the price of jute, the income is necessarily higher than that given by Jack; otherwise it would have come up to a nearer approximation of his figure. The present year (1932) has the lowest record for the price of jute, rice and other agricultural products known during the last decade and if it be calculated at the current price ruling in the market, the average income will be reduced considerably, in fact less than halved.

⁸ All the big estates are owned by absentee zemindars resident in Calcutta. Below is appended a list of some of the big zemindaris: Telihat Amirabad, 72,000 acres; Haveli, 60,900 acres; Kotalipara, 34,600 acres; Idilpur, 33,200 acres. (Cf. Chap. II).

per head per year is required for average consumption. The population of Bengal is 45,791,689. Therefore the total amount of rice required for feeding Bengal is 320,541,823 mds. We have thus a deficit of 43,165,121 mds. or nearly *one maund per head per year* or the daily ration comes to $\frac{3}{4}$ seers.⁹

It may at first sight seem paradoxical that one of the most fertile of districts should have such a low income per head. The explanation lies in the high degree of its density, the soil supporting 949 persons to the square mile. Next to Howrah (1,882 to the square mile), Dacca (1,148) and Tippera (972), Faridpur is the most thickly populated district in Bengal; and if only

⁹ These figures are based upon the report issued by the Agricultural Department as stated above. The total outturn of paddy has been calculated by adding up the yield, district by district. The statistics fully bear out Latif's contention (*Economic Aspect of the Indian Rice Export Trade*, 1923), "that the total produce of rice is not sufficient to meet the requirements of the people." Latif calculates that the total quantity of rice required for consumption in India is 33·51 millions of tons; whereas the yield is only 32·02 million tons. There is thus a deficit of a million and a half tons. "It seems therefore that but for the relief which Burma rice gives to the people of India, the consequences would have been disastrous" (*op. cit.*, pp. 13-14).

Panandikar says that "with regard to rice, it has been found that half a seer per day for an adult male and a little less for an adult female or a child is enough to prevent starvation * * * although the amount does not suffice to give the (family) members adequate nourishment for the purpose of possessing full strength and vigour." (*op. cit.*, pp. 164-65).

Banerjea (*Fiscal Policy in India*, pp. 198-199) says: "It is open to doubt whether there is, in a normal year, any exportable surplus of food-grains in the country. Some persons, whose opinions are entitled to weight, hold that the total production of food in India is not sufficient for her own consumption, and if everybody were to be adequately fed, she would be a food importing, not exporting, country".

Cf. also: "The net available cereal supply in India amounts to 48·7 million tons against the total cereal requirements of 81 million tons odd. This means a deficit in food supply only of 40 p.c. From the above figure we are driven to the obvious and unavoidable conclusion that the Indian people are underfed."—C. N. Zutshi: *Modern Review*, Sep., 1927, p. 265.

The independent and concurrent evidence of all the writers on this subject is that not only Bengal but India as a whole suffers from food-shortage.

the cultivated area is taken into account, the density rises to the high figure of 1,202 (persons) per square mile. Mr. Thomson, Superintendent of Census Operations in Bengal in 1921, is indeed of opinion that the district must shortly reach a condition in which there will be little margin for further pressure on the soil. "The standard of living of agricultural population in the Western countries has been adjusted to a density of not more than 250 persons per square mile. The surplus population has been drawn off into industrial and commercial pursuits. * * * But the agriculture in the delta has to support from three to four times this number per square mile. * * * Moreover, the delta has to support not merely the natural increase in its population, but also the excess of the immigrant over the emigrant population, which although small, has shown a tendency to increase in recent years. * * * Immigration into the delta from the U. P. and Bihar and Orissa where the pressure of population is heavier and its economic condition somewhat worse, takes place on a large scale, amounting to nearly $\frac{1}{2}$ million during each of the decades 1901-11 and 1911-21." (Panandikar: *op. cit.* pp. 224-225).

The pressure on the land is multiplied. Fragmentation of holdings is an evil attendant upon the pressure on the land. In most of the districts in Bengal the average size of a holding is about 2.2 acres. The Hindu law of inheritance favours the equal division of property among the heirs (and the Mahomedan law more so) and this leads again to division and subdivision of the small holdings, so much so that the size is often reduced to less than half an acre. For the sake of comparison the size of the average agricultural holding in some of the foreign countries is given below:—

England	...	...	...	62.0	acres.
Germany	...	...	...	21.5	"
France	...	...	...	20.25	"
Denmark	...	...	...	40.0	"
Belgium	...	...	...	14.5	"
Holland	...	...	...	26.0	"
U. S. A.	...	...	...	148.0	"
Japan	...	...	...	3.0	"
China	...	...	...	3.25	"

III. ECONOMIC CONDITION OF RUNGPUR.

Mr. Pramathanath Maitra, assistant manager, Tajhat Raj, drew up in 1919 a brief report on the industries of this district. The burden of it is the decline or the ruin of almost all the indigenous industries with the result that "the pressure on agriculture is increasing day by day". The following extracts from the Report tell a doleful tale:—

"All the industries of Rungpur are handicraft industries. Almost all of them are dwindling away except the sacking and the gur manufacture. The industries were mainly supported by the local people, the nearest markets being the only places where the manufacturers used to take them. With the importation of foreign articles of cheap price the manufacturers do not find their industries lucrative and most of them have taken to agriculture, though they carry on such industries on a small scale in their leisure hours and mainly on orders. The *satranchies* (a kind of carpet) of Rungpur were known all over Bengal but railway communication having been established between different parts of the country, the Behar and U. P. *satranchies*, which are of inferior quality and cheap price, have almost driven the Rungpur *satranchies* out of market."

"The chat (gunny) Industry :—The chats were and are prepared by the womenfolk of the district. They themselves make fine ropes from jutes and weave chat with them. Formerly the chats were in great demand. When the standard of living was very low among the cultivators they used these chats as night-cover during winter. Two or three stitched together serve the purpose of an ordinary quilt in keeping the body warm. The cheap foreign blankets have been steadily replacing them.

"Endi (coarse silk) Industry :—This industry is fast dying out.

"The Cotton-weaving Industry :—This industry has become almost extinct.

"Kansa (bell-metal) Industry :—This industry was

mainly confined to the easternmost portion of the district. The industry has almost died out.

“Sugar and Gur Industry :—Years ago Rungpur was one of the principal sugar supplying districts in Bengal. Relics of sugar factories can still be seen but in such factories machinery was never used. Sugar is now manufactured on a very small scale and it is used by the local people only during the religious ceremonies. The importation of cheap foreign sugar killed this industry.

“Rungpur with a population of 23 lakhs of people is principally an agricultural district. Annual agricultural wealth is estimated by Mr. J. N. Gupta, M.A., I.C.S., Commissioner, as nine half crores of rupees or 950 lakhs of rupees: the annual income per head of population thus amounts in round number to Rs. 40/- or Rs. 3 as. 6 per month or one anna nine pies, i.e. 2d. per day.

“The pressure on agriculture is increasing day by day and industrial development is urgently needed to relieve the pressure, otherwise petty factious litigations in connection with land disputes will be of frequent occurrence.”

In Bengal the State (i.e. the foreign rule) has done its level best to strangle every cottage industry out of existence so that machine-made substitutes from “home” may be dumped on the peasantry. Japan, on the other hand, sets a noble example by encouraging subsidiary cottage industry. (*Vide Allen: Japan*, p. 122).

From the account given above it would appear that the peasantry are by no means better off in spite of many “scientific” improvements and the opening up of remote districts and villages by means of railways and inland steamers under a civilized but foreign rule. Mr. Ramsay Macdonald with the vision of a statesman could correctly gauge the situation when he said that it was a case of the “West blundering in the East”. Ideas borrowed from Adam Smith and Ricardo when forced upon a primitive people often lead to disasters. Such has become the unfortunate lot of our poor peasantry.

CHAPTER XXV.

BENGAL—THE MILCH COW.

DRAIN OF THE WEALTH OF BENGAL DUE TO POLITICAL SUBJECTION.

“Bengal from the very first seems to have been the *milch cow* from which the other provinces drew their support”.—*W. W. Hunter*.

I. BENGAL—A CREDITOR COUNTRY.

It is a remarkable fact that even in the palmy days of the Moghol Emperors Bengal scarcely paid its way ; her military expenses had often to be met by drawing upon the resources of the other *subas*. The discerning eye of Aurangzeb was not slow to discover in Murshid Kuli Khan financial abilities of a high order and he was sent to Bengal as Dewan, *i.e.*, head of the revenue administration, in 1702. Under the able management of Murshid the revenue of Bengal soon amounted to a crore of rupees. Aurangzeb was now sorely in need of money to conduct his gigantic scheme of conquest in the Deccan and the Dewan was not slow to ingratiate himself with the Emperor and fortify his position by means of timely remittances to the imperial coffers. When Sultan Azimusan, the titular subadar of Bengal, was on his way to Delhi, he heard of his grandfather's death (1707) and the revenue of Bengal to the extent of a core of rupees fell into his hands; this amount evidently represents the annual tribute to Delhi.¹

¹ According to Stewart the revenues of Bengal in 1722 under the rule of Murshid Kuli Khan were increased to one crore and thirty one lakhs or £1,780,000 in round numbers. Deducting for the expenses of the government the net revenue will exceed a crore of rupees. Ascoli puts down the revenue roll at Rs. 1,42,88,286; this gives the revenue of Bengal proper only.

Mandeville, writing in 1750, states that the payment of the Emperor's revenue sweeps away almost all the silver, coined or uncoined, which comes into Bengal. It goes to Delhi, from whence it never returns to (Lower) Bengal; so that after such treasure is gone from 'Muxadabad' (Murshidabad), there is hardly currency enough left in Bengal to carry on any trade, or even to go to market for provisions and necessities of life, till the next shipping to bring a fresh supply of silver.²

The wealth plundered by the Marhattas during their depredations from 1740 to 1750 and the exaction of the *chouth*, must have amounted to several crores. According to Seir Mutaqherin, in the first invasion of the Marhattas, and when Murshidabad was not yet surrounded by walls, Mirhabib with a party of their best horse, having found means to fall upon that city before Aliverdi could come up, carried from Jagat Seth's house two crores of rupees in Arcot coin only and this prodigious sum did not affect the two brothers, more than if it had been two trusses of straw. They continued to give afterwards to the Government, as they had done before, bills of exchange called *dursannies* (i.e., payment at sight) of one crore at a time."

Previous to the battle of Plassey—the great landmark in the history of Bengal—the exactions and loots were more or less spasmodic and the people recovered from their shocks after a

² Mandeville, however, failed to realise that the wealth *apparently* drained away to Delhi flowed back to the provinces in some shape or other. Catrou, however, in his *General History of the Mogul Empire*, (1708), truly diagnoses the real situation: "Doubtless", remarks he, "such prodigious wealth is amazing but it must be remembered that all these riches only enter the Mogul treasury to go out again, at least in part, every year, and flow again over the land. Half the empire subsists on the bounty of the Emperor or at least is in his keep. Besides, the multitude of peasantry, who toil only for the sovereign, are supported at his cost, and almost all the artisans of the towns, who are made to work for the Mogul are paid out of the royal exchequer".

Cf. also "It makes all the difference whether so many lakhs a year should be spent in luxury in London or in luxury in Murshidabad"—Torrens: *Empire in Asia*, p. 187.

time; but the persistent systematic drain of wealth, to which this unhappy province was now subjected, impoverished her beyond the powers of recuperation. After the battle of Plassey, the East India Company as the virtual masters of the situation, like the Pretorian Guards of Rome, sold the *masnad* of Bengal to the highest bidders. According to the Third Report of the Select Committee of the House of Commons (1773) it would appear that during the period 1757-1765 the Warwicks, by making and unmaking Nawabs in Bengal, brought to the Company and their own pockets no less a sum than five to six crores of rupees; a substantial part of this wealth found its way to England in some form or other.³

This constituted, however, the least part of the evil. On the acquisition of the Dewani from the titular Emperor of Delhi in 1765, the Company became the *real and legal* rulers of Bengal. The net revenue of the province, after deducting the tribute to the Great Mogul (26 lakhs), allowance to the Nawab, and the charges of collection, began to be utilised as "Investments."

The holders of East India stock, nay the British Government itself, demanded a share of the territorial revenues of Bengal. Most of this surplus money thus received was used for purchasing articles of exports, in exchange of which Bengal received nothing.

A concrete example will make the point clear. Even as late as 1786 "the realisation of the revenue formed the Collector's permanent duty, and on his success in this respect rather than on the prosperity of the people, his reputation as an officer depended."⁴ The net revenue of the districts (Birbhum and Bishnupur) exceeded £100,000 sterling and the expenses of the Government seldom amounted to £5,000; of the remaining £95,000, part was remitted to Calcutta or to other treasuries and part was retained to carry on the Company's manufactures in the districts.

³ Vide Sinha's *Econ. Annals*, p. 41.

⁴ Hunter : *Annals of Rural Bengal*, ed. 1897, pp. 268-87.

What the "Investment" was and what it led to is fully explained in the Ninth Report of the Select Committee of the House of Commons (1783):—

"A certain portion of the *revenues of Bengal* has been for many years set apart in the purchase of goods for exportation to England, and this is called the Investment. The greatness of this Investment has been the standard by which the merit of the Company's principal servants has been too generally estimated; and this main cause of the impoverishment of India has been generally taken as a measure of its wealth and prosperity. Numerous fleets of large ships, loaded with the most valuable commodities of the East, annually arriving in England in a constant and increasing succession, imposed upon the public eye, and naturally gave rise to an opinion of the happy condition and growing opulence of a country whose surplus productions occupied so vast a space in the commercial world. This export from India seemed to imply also a reciprocal supply, by which the trading capital employed in those productions was continually strengthened and enlarged. But the payment of a *tribute*, and not a *beneficial* commerce, to that country, wore this specious and delusive appearance."

It is immaterial as far as Bengal is concerned, whether the wealth of Bengal found its way direct to England or through circumlocutory channels. As Hunter says:—

"The East India Company itself, in its mercantile capacity, carried a quarter of a million sterling per annum out of Bengal to China; Madras constantly required specie from Bengal to purchase its investment; and Bombay, which did not pay the expense of Government, had to be supplied from the same source. The council constantly complain that while no currency existed with which to carry on internal commerce, the exportation of silver went on upon an unprecedented scale." *op. cit.* p. 303.

In 1780 Sir Eyre Coote the Commander-in-Chief writing to the Governor-General and his Council informed:—

"The treasury of Madras was empty, and that the immediate needs at Fort St. George would exceed 7 lakhs of rupees per month, every *cowire of which must come from Bengal* as he found there were no resources from which a single pagoda could be expected." In a letter written in 1792 to the India House, the Commander-in-Chief pointed out that, "Both the army and the inhabitants in the state, in which the country then was, had to be maintained chiefly by supplies from Bengal."

Again :

"The Calcutta exchequer had been emptied to carry on the Marhatta war * * * *. In the end of 1790, the war with Tipu had drained the Company's treasure chests".⁵—Hunter: *op. cit.*, p. 238.

Wars on a more formidable scale were launched by Lord Wellesley resulting in the crushing and final overthrow of the Marhatta confederacy ; but the sinews of war were supplied by Bengal. From time immemorial up till the battle of Plassey, *Bengal was a creditor country.*

II. PLASSEY DRAIN.

In the beginning of this chapter reference has been made to the drain of wealth to Delhi, but there is an immense difference between this drain and the perpetual, incessant economic drain of wealth to England known as "Plassey Drain."

"During the period 1708-1756, bullion formed 74 p. c. of the English Company's total imports of Bengal and it amounted to £6,406,023. The trade of Bengal, both inland and foreign, exclusive of the commerce of the European companies, was also very flourishing during the first half of the eighteenth century. The Hindu, Armenian and Mahomedan merchants carried on a brisk trade with other parts of India and with Turkey, Arabia and Persia." (Sinha).

Then in 1783 Edmund Burke in his memorable speech on Fox's East India Bill drew a vivid picture of the exhaustion of India's (practically Bengal's) wealth due to the "Plassey Drain" :—

"The Asiatic conquerors very soon abated of their ferocity, because they made the conquered country their own. They rose or fell with the rise and fall of the territory they lived in. Fathers there deposited the hopes of their posterity ; the children there beheld the monuments of their fathers. Here their lot was finally cast ; and it is the normal wish of all that their lot should not be cast in bad land. Poverty, sterility,

⁵ Even as early as 1758 the depletion of the Bengal Exchequer had begun for the wars of the Deccan ; thus we read "He (Clive) therefore supplied it (the Government) most liberally from his own full treasury". Again, "The Government of Bengal had not only assisted Madras with money etc."—Marshman : *History of India*, ed. 1867, pp. 283, 328.

and desolation are not a recreating prospect to the eye of man and there are very few who can bear to grow old among the curses of a whole people. If their passion or avarice drove the Tartar lords to acts of rapacity or tyranny, there was time enough, even in the short life of man, to bring round the ill effects of the abuse of power upon the power itself. If hoards were made by violence and tyranny, they were still domestic hoards, and domestic profusion, or the rapine of a more powerful and prodigal hand, restored them to the people. With many disorders, and with few political checks upon power, nature had still fair play, the sources of acquisition were not dried up, and therefore the trade, the manufactures and the commerce of the country flourished. Even avarice and usury itself operated both for the preservation and the employment of national wealth. The husbandman and manufacturer paid heavy interest, but then they augmented the fund from whence they were again to borrow. Their resources were dearly bought, but they were sure, and the general stock of the community grew by the general effect.

“But under the English Government all this order is reversed. The Tartar invasion was mischievous, *but it is our protection that destroys India.* (Italics are mine). It was their enmity, but it is our friendship. Our conquest there, after twenty years, [I may say after 175 years] is as crude as it was the first day. The natives scarcely know what it is to see the grey head of an Englishman; young men, boys almost, govern them without society and without sympathy with the natives. They have no more social habits with the people than if they still resided in England; nor, indeed, any species of intercourse but that which is necessary to making a sudden fortune, with a view to a remote settlement. Animated with all the avarice of age, and all the impetuosity of youth, they roll in one after another; wave after wave, and there is nothing before the eyes of the natives but an endless, hopeless prospect of new flights of birds of prey and passage, with appetites continually renewing for a food that is wasting. *Every rupee of profit made by an Englishman is lost for ever to India.*” (Italics are mine).

Huge fortunes were accumulated by the Company’s servants, who on their retirement were anxious to dispay their ill-gotten wealth. They lived luxurious and ostentatious lives. The literature of the day is full of biting sarcasm on

the "Indian Nabobs"—Burke's "Birds of prey and passage," who—

" Rich in the gems of India's gaudy zone,
And plunder, piled from kingdoms not their own,

* * * * *

Could stamp disgrace on man's polluted name,
And barter, with their gold, eternal shame."

The total drain to England during the period 1757 to 1780, often named the "Plassey Drain," is put down at 38 million pounds sterling. "Even if it was a few million pounds less, it must have been a very heavy burden on the people of Bengal,—much heavier at that time than it would be at the present day, because the purchasing power of the rupce was then at least five times as high."⁶

Lord Clive, in his evidence before the Parliamentary Committee, 1766, observed:—

"The city of Murshidabad is as extensive, populous and rich as the city of London; with this difference that there are individuals in the first possessing infinitely greater property than any of the last city."

But within a quarter of a century the very same Murshidabad resembled a sucked orange and presented a scene of ruin and desolation, thanks to the "Plassey Drain".

Dean Inge with his characteristic brutal frankness observes:—

"The first impetus was given by the plunder of Bengal, which after the victories of Clive, flowed into the country in a broad stream for about thirty years. This ill-gotten wealth played the same part in stimulating English industries as the 'five millions,' extorted from France, did for Germany after 1870."—*Outspoken Essays*: p. 91.

The annexation of Upper Burma in 1886 also tells the same tale. For twenty years its administration did not pay its way

⁶ Sinha, *op. cit.*, p. 52.

and it lived all this time on the extorted bounty of other provinces. But even before Upper Burma was annexed, Lower Burma was not paying its way. Gokhale finds that for more than 40 years the whole of Burma was a costly white elephant to India and "as a result we find that Burma is indebted to-day (27th March, 1911) to India to the tune of about 62 crores." *But the lion's share of this huge amount was borne by Bengal* not only in the shape of increased taxation on salt but because of her being the largest contributor to the Imperial Exchequer. The real objective of annexation was the finding of a profitable market for the products of the Lancashire looms and the possession of the rich timber forests, the ruby and oil mines; the exploitation of which has been going on merrily. Thus the poor starving Indian ryot paid the cost of annexation and upkeep of the province and the British capitalists and adventurers thrived galore. Recently an agitation has been engineered by designing British exploiters for the separation of Burma from India. Some thoughtless Burmese have also been won over to this purpose by the lure of a few appointments under Government.

III. DRAIN OF WEALTH OF BENGAL DUE TO MESTON AWARD.

The Meston Award deprives Bengal of more than two-thirds of her revenues, leaving only one-third for the really "nation-building" departments. Under this, our unfortunate province is made to part with the most expansible items of revenue, *e.g.*, Customs, Income-tax, Railways, etc. Thus Customs which yielded nearly 34 crores in 1921-22 leapt up to nearly 50 crores in 1929-30. Whereas the most unpopular and least elastic sources were left to the so-called "transferred" subjects under the Indian Ministers with the bitter irony that they must bear the opprobrium attached to the spread of the vices of drink (alcoholic excise) and litigation (stamp and court fees).

It has already been shown that since the battle of Plassey, Bengal has been the milch-cow which has supplied sinews for

conquest of the whole of India. Under the "Reforms" with its concomitant known as the Meston Award this province has been the hardest hit, and is being ruthlessly bled as far as its finances are concerned.

I have all along tried to show that the "financial starvation" of Bengal, (the "milch cow") began since the battle of Plassey. The Meston Award simply intensified the evil.

Sir Alexander Mackenzie (Lt. Gov. of Bengal) on the occasion of the debate on the Imperial Budget in the year 1896 spoke thus :—

"The Provincial sheep is summarily thrown on the back, close clipped, and shorn of its wool, and turned out to shiver till its fleece grows again" (to be fleeced again of course).

Thus Bengal is the perpetual victim of Imperial injustice.

Bengal—the richest and the most populous of the five major provinces—is getting the smallest amount for its expenses ; as a result of which is the chronic starvation of its "nation-building" departments. Take only one instance, *viz.*, education. In 1924-25, the latest year for which figures are available, the expenditure on education from different sources was as follows :—

Province		From Govt. Funds.	From Fees.
Madras	...	1,71,38,548	84,32,991
Bombay	...	1,84,47,165	60,13,969
Bengal	...	1,33,82,962	1,46,36,126 ⁷
U. P.	...	1,72,28,490	42,14,354
Punjab	...	1,18,34,364	52,87,444

⁷ Bengal gets from the Government only a little more than the Punjab (of which the population is less than half that of Bengal) and less than each of the other major provinces. Note also that Bengal is the only province which pays for its education more in fees than it receives from the Government.

Taking Education, Public Health, Medical, Industries and Agriculture as the five nation-building departments, we have arrived at the following table from which the financial plight of the province of Bengal can be read off at a glance.

Expenditure *per capita* on nation-building services based on accounts of 1928-29.

Province		Aggregate amount spent	Expenditure <i>per capita</i>
Madras	...	4'25	1'00
Bombay	...	3'07	1'59
Bengal	...	2'73	0'58
U. P.	...	2'98	0'65
Punjab	...	2'90	1'40
B. & O.	...	1'47	0'42
C. P.	...	1'08	0'77
Assam	...	0'58	0'76

(Figures of Column 2 in crores of rupees and figures of Column 3 in rupees only).

Roughly speaking, the Punjab and Bombay spend respectively, 166 and 133 per cent. more per head than Bengal on nation-building services; Madras spends roughly 66% and C. P. and Assam 25% more per head than Bengal under these items. Here also the only province spending per head lower than Bengal on nation-building services is Bihar and Orissa.

It is conclusively proved that the "Meston Award" has legalised plunder and is absolutely iniquitous. Bengal ought to have the whole of the jute export duty. According to Mr. K. C. Neogy, up to the 31st March, 1927, the Government of India have, by means of this tax, netted at least 34 crores of rupees, starving all the nation-building departments of Bengal.

Another source of weakness in the financial position of Bengal is its lack of earning under the head 'Irrigation'. While valuable revenue has accrued to a number of provinces

as a result of a large capital expenditure in connection with the irrigation operations, no such revenue of considerable magnitude accrues to this province. The following table indicates the comparative position of Bengal in regard to irrigation revenue.

Irrigation revenue in various provinces based on the accounts of 1928-29.

Province	Interest on borrowed capital employed in irrigation.
Madras ... 1'83	0'53
Bombay ... 0'65	0'55
Bengal ... 0'01	0'18
U. P. ... 0'84	0'88
Punjab ... 3'74	1'20
B. & O. ... 0'20	0'20

(Figures in crores of rupees).

For an unblushing admission of the real reason of the unfair financial treatment of Bengal, one may profitably quote the observations of Mr. Forbes, the member for Madras, in the Indian Legislative Council, 3rd May, 1861 :—

“When Mr. Grant (Lieutenant-Governor of Bengal) complains that Lower Bengal does not receive its fair share of public works expenditure, I think he leaves too much out of consideration that the permanent settlement has deprived the Government of the inducement to expend money in these provinces as they would receive no direct return for their outlay ; and although the indirect return would be inducement enough if they could do no better, it is not surprising that they prefer to expend capital in those parts of the Empire where the return is both direct and indirect.” Quoted by J. N. Gupta : *Financial Justice to Bengal*, pp. 57-58.

It is evident that Bengal suffers in spite of the fact she has enough resources to depend upon for her internal development. Apart from anything else only the income from the

export duty on jute ($4\frac{1}{2}$ crores nearly) would have saved her from financial bankruptcy. That Bengal now makes the largest contributions to the coffers of the Central Government is evident at a glance from the following table :—

Province of India.		Percentage of revenues contributed.	
		1921-22.	1925-26.
Bengal ...	...	36'0	45'0
U. P. ...	...	6'0	1'6
Madras ...	...	12'3	9'6
Bihar and Orissa ...	...	0'7	0'7
Punjab ...	...	4'0	1'5
Bombay ...	...	39'0	40'0
C. P. ...	...	1'5	1'0
Assam ...	...	0'5	0'6
Total ...	...	100'0	100'0

J. N. Gupta, *op cit.*, p. 35.

It will thus be seen that the foundation and consolidation of the Indian Empire have been achieved by means of continuous exactions from the Bengal treasury ; in conducting the wars with Tipu, the Marhattas and the Sikhs, this unhappy Province has been bled white and her legitimate wants have been all along ignored. Under the Meston Award again this copious bleeding has been going on still merrily.⁸

Bengal has thus been sacrificed at the altar of the Moloch of Imperialism, on the time-honoured Rob-Roy principle :

“For why? Because the good old rule
Sufficeth them ; the simple plan,
That they should take who have the power
And they should keep who can”.

⁸ It is evident from the findings of Federal Finance Committee, just released, (June, 1932), that Bengal cannot expect any substantial succour from the Central Government even during the next stage of the Reforms. Bengal has, in fact, been left just where she was.

CHAPTER XXVI.

BENGAL—THE MILCH COW (*Contd.*).

THE FAILURE OF THE BENGALIS AND THE ECONOMIC CONQUEST OF BENGAL BY NON-BENGALIS.

I. FAILURE DUE TO INEPTITUDE.

The two essential elements to ensure success in trade and commerce are sadly lacking in the Bengali character—I mean a spirit of enterprise and a business instinct. The Bengali is more idealistic and sentimental than practical and therefore in the actual world of business holds a backward place. A side light on this point is thrown by the account of the cloth trade of Dacca in 1753 as given by Taylor. We glean from it a fair idea of the merchants of different nationalities excepting Bengalis taking part in Bengal commerce during Alivardi's rule. They are (1) the Tooranese (merchants from Turan—country beyond the Oxus) ; (2) the Pathans for the markets of the upper provinces ; (3) the Armenians, for the Basra, Mocha and Jidda markets ; (4) the Moghols, partly for home consumption and partly for the Basra, Mocha and Jidda markets ; (5) the Hindus for home consumption and finally (6) the English company ; (7) the French company ; (8) the Dutch company.¹ The European companies, it is needless to add, carried on exportation to Europe as well as to other foreign markets. The important share, which the Armenians bore in the maritime trade, will also be evident from the fact that after the fall of Siraj-ud-dowla the treaty which was entered into with Meer Jaffar had a clause of indemnity to "Sufferers at the loss of Calcutta". While 50 lakhs was allotted

¹ J. C. Sinha : *op. cit.*, pp. 32-33 (footnote).

to the English sufferers, 7 lakhs was granted to the Armenians.² Even in the sixteenth century the sea-borne trade was by no means inconsiderable for it is on record that in 1577 Sheikh Bhik of Maldah sent 3 ships of Maldahi cloth to Russia by the Persian gulf.

In Hasting's days the foreign trade of Bengal was almost entirely in the hands of the Europeans.³

In the cloth trade of Dacca quoted above under item (5) come the Hindus for home consumption, but the value of the cloth is given as Rs. 200,000 out of the total Rs. 2,850,000 ; in other words less than one fourteenth part of the trade falls to the share of the Hindus, who again are properly speaking non-Bengalis.

It is well known that Banking and mercantile transactions go hand in hand. In Europe, in the middle ages and especially in the 15th, 16th and 17th centuries in Venice, Amsterdam, Hamburg, London, in fact, wherever there was a brisk maritime trade carried on, there was a Rialto, the Exchange humming with money dealers and gatherers.

The general apathy of the Bengali in business was taken advantage of by shrewd up-country Hindus in the Department of Banking, which is essential to commercial undertaking.

² Stewart's *Hist. of Bengal* (1813), appendix, p. 547.

Cf. "The Armenians have, from time immemorial, traded with India, whither they were allured from their distant homes in the snow-clad mountains of Armenia, by the glamour of lucrative trade in spices, muslins and precious stones which they carried on successfully with Europe long before the advent of any European traders, adventurers and interlopers into the country."—*Indian Historical Records Commission*, vol. iii. p. 198.

³ "Excepting two branches of maritime trade, (trade with the Maldives and Assam) which, for particular reasons (bad climate of the Maldives and Brahminical influence in Assam) have been confined to the country, the people of Bengal have been deprived of all others by the Europeans."—Abbé Raynal: *A philosophical and political History of the settlements and trade of the Europeans in the East and West India*, vol. i, p. 144. (Ed. Lond., 1783.)

They began to establish banking agencies near Murshidabad towards the latter half of the 17th century. Thus we read :—

“Banking on European lines is of comparatively recent growth in India. Long before the Europeans came into this country there had been a highly developed indigenous system. No royal court was complete without a State Banker, who was often invested with the power of a minister”.⁴

Again: “These Hindus were especially influential in matters of finance, for the commerce of the province was almost entirely in the hands of big merchants, most of whom were up-country Hindus, like Omichand and the Seths, though a few were Armenians, like Coja Wajid and Aga Manuel.”⁵—
S. C. Hill: *Bengal in 1756-1757, Chap. I. Intro.*

It was during the reign of Emperor Farrukhsiyar that the great financial house of Jagat Seth rose to the pinnacle of its wealth and greatness. This family was founded by a Jain merchant named Manik Chand, who died in 1732, but who had apparently handed over the management of his business in Bengal to his nephew, Fathe Chand, before his death. In 1713, when Murshid Kuli Khan was made Governor of Bengal, Fathe Chand was appointed Imperial Banker, and given the title of ‘Jagat Seth’, or ‘Merchant of the World’. He died in 1744, and left his business to his grandsons, Seth Mahatap Rai and Maharaja Swarup Chand, whom we shall find figuring largely in the history of the Revolution. In the English accounts no distinction is made between Fathe Chand’s grandsons, and they are generally referred to simply as ‘Jagat Seth’ or the Seths. The importance of the firm at Murshidabad was very great.

“Juggutseat is in a manner the Governor’s banker ; about two-thirds of the revenues are paid into his house, and the

⁴ H. Sinha : *Early European Banking in India*, p. 1.

⁵ Coja Wajid was not an Armenian; in fact, at page 304 of the same book we read: “The Nawab had employed the Moor (Moslem) merchant Coja Wajid as his agent”.

Government give their draught on him in the same manner as a merchant on the Bank, and by what I can learn the Seths (Seths) make yearly by this business about 40 lacks”.

Under Mahatap Chand, this house reached the zenith of its prosperity. Nawab Alivardi Khan highly respected Mahatap Chand and when in 1749 the English Factory at Kashimbazar was surrounded by the Nawab's troops, owing to the dispute between the English and some Armenian merchants, the English propitiated the Nawab by paying him through the Seths, 1,200,000 rupees. Banks under European management had not then been started in this country and the English and other foreign companies used to borrow money from the Seths. “Their riches were so great that no such bankers were ever seen in Hindusthan or Deccan ; nor were there any Bankers or merchants that could stand a comparison with them all over India. It is even certain, that all the bankers of their time in Bengal were either their factors or some of their family”. There were however other bankers though of lesser magnitude. During the early days of the Company's rule, the remittance of land revenue from the outlying districts to Murshidabad and afterwards to Calcutta used to be carried on through them. By 1780, the house of Jagat Seth had begun to decline and in 1782, Gopaldas and Harry Kissen Das were appointed in its place.

Among other influential indigenous bankers of this time occur the names of Ram Chand Shaw and Gopal Charan Shaw as also of Ram Kissen and Lachmi Narayan. We also read that Ramjeeroun (Ramjee Ram) *gomosta* (agent) of the leading banking firm of Nuderam Bydenath in Calcutta, in his evidence before the Currency Committee of 1787, said that the chief business of the firm was in bills of exchange for the remittance of the collections of revenue. In 1788 Shawgopal Doss and Monohur Doss⁶ and twenty-four other *Kothiwals* (i.e. indi-

⁶ The busy quarter in Burra Bazar known as Monohur Das Chak is evidently derived from his name.

genous bankers) of Calcutta sent an "address of thanks" to Cornwallis for the steps taken to reduce the *batta* on mohurs. The author of the *Economic Annals of Bengal* thus sums up the situation: "It appears from the names of these *Kothiwalis* and other signatures in vernacular that *all of them were non-Bengalis*. The Bengalis had no banking house in Calcutta at that time. The Bengali bankers were apparently mere *poddars* or money changers."—*op. cit.* p. 212.

One instance may be cited here to prove to what extent the indigenous banking system had spread over Bengal and the up-country. In the pre-railway days, some 75 years ago, my grandfather went on pilgrimage to Gaya and Benares. The journey in those days had to be performed in bullock carts or in boats and it was not safe to carry cash of any large amount. My grandfather deposited money with a banking house in Burrabazar (Calcutta) and was furnished with letters of credit (*hundi*) to the up-country cities.

Banking and mercantile enterprise often go hand in hand as I have said above. A century and a quarter ago, when Rammohan Ray was *Sheristadar* of Rungpur, he used to hold meetings in the evenings to discuss religious problems. We find the Marwari traders already in evidence there.⁷

Even before the annexation of Assam by the British the Marwaris had gone up the Brahmaputra to its very sources *e.g.* Sadiya, and were carrying on a most lucrative trade. More than a century has elapsed since then and we now find the

⁷ Cf. "From all accounts, it was during his residence in Rungpur that Ram Mohan first began to assemble his friends together for evening discussions on religious subjects, especially on the untenable positions and absurdities of idolatry. Rungpur was then a place of considerable resort, and among its inhabitants were a good many merchants from Marwar in Rajputana, Jainas by faith. Some of these Marwaris used to attend Ram Mohan's meetings, and Mr. Leonard says that he had to learn on their account the *Kalpa Sutra*, and other books appertaining to the Jaina religion".—*Life and Letters of Rammohun Ray*, London (1900) by Miss Collet: p. 12.

Marwari trading and banking houses spreading over the length and breadth of Assam i.e. the Darang or the Brahmaputra Valley, like a network and even financing European Tea gardens to the exclusion of the Assamese.⁸

At Darjeeling, at Kalimpong,⁹ in fact on the Sikim and Bhotan frontiers, an extensive export trade in wool, musk, ghee, cardamom etc., as also import trade in salt and piece-goods amounting to several crores, is carried on exclusively by the Marwaris. The Bengalis have allowed themselves to be driven out of their own vantage ground. To what extent this slow, imperceptible and peaceful penetration by the Marwari has affected the rural economy of our country will be made clear by reciting some typical instances. At Karmatar within a stone's throw of the East Indian Railway Station is the Bazar or the trading mart. Here all the important export and import business is in the hands of the Marwari traders. From Karmatar I once had occasion to go to a place named Karo nearly five miles off ; here also one or two Marwari houses had the monopoly of all the trade ; they were also waxing fat as money-lenders to the poor peasant folks all round.

In Bengal proper also the state of things is much the same. At Talora in North Bengal near Bogra, a Marwari is the biggest exporter of the local rice ; he has set up a rice mill ; he is in addition a thriving money-lender. At Bardal, on the river Kapotakshi in the southern portion of Khulna, there is a weekly hat or mart where an extensive import and export transaction is carried on ; but the leading firms are all owned

⁸ Cf. Gait's *Assam* : "As early as 1835 when the journey down stream from Goalpara to Calcutta occupied from 25 to 30 days and that in the opposite direction about 80 days or more, we find enterprising Marwari merchants establishing themselves in Assam and some of them had penetrated even as far east as Sadiya".

⁹ Kalimpong is called the "inland port of Tibet" as all its export and import trade is carried on through this city. The export of wool alone is valued at 50 to 60 lakhs of rupees. There are, of course a few Bengalis at Kalimpong but simply as officials or clerks in Government offices.

by Marwaris. Bishnupur, near Bankura is a seat of Tusser (a kind of coarse silk) cloth manufacture. Only a few years ago the business was conducted by the Bengalis, but they have now been completely ousted by the pushing and plucky Marwaris. The silk industry of Murshidabad and Maldah is also mainly carried on by advances from the Marwaris and Bhatia merchants, who are practically the biggest exporters of the stuff.

Bengal is an agricultural country. The produce of the land—rice, jute, oil-seeds, pulses—is mainly controlled by the Marwaris who would have also taken a large share in export of hides, had it not been for the fact that their religious prejudice stands in the way.¹⁰ The import trade of Bengal is also to a large extent in the hands of the Marwaris ; not only are they the *banians* of the importing European houses, but between these and actual consumers there is an “interminable series” of dealers and middlemen who are principally Marwaris.

It should however in fairness be admitted that among the middlemen who act as distributors in the export and import trade there is yet a not inconsiderable number of Bengalis, both Hindu and Mussalman. The high caste Hindus and the upper class Mussalmans have, however, no lot or part in it. They chiefly hail from the Tili and the Saha and sometimes from the Kapali castes. Many of these latter, however, have now become Zemindars and money-lenders and are fast losing the mercantile instincts. Though they have not as yet swelled the ranks of degree-hunters as the so-called upper castes represented by the Brahmins, the Kayesthas and the Vaidyas, still they find themselves ousted from their ancestral callings by the virile and plucky sons hailing from outside Bengal. The Moslem youth of Bengal has been still more behind in the struggle and

¹⁰ The fish trade is however being slowly captured by the adventurous up-countrymen and even Marwaris. The Hilsa of the Padma and the sea-fish as caught at Chilka lake are purchased wholesale at the depots, packed in ice and sent to Calcutta.

competition for bread-winning. There are the Mussalman *Baparies* and *Aratdars* ; but they all belong to the lower and illiterate classes. The Hindus have an instinctive repugnance for cow-hides and hence the internal hide trade is the monopoly of the Mussalmans. But all the big exporters of such raw hides are Europeans.

II. FAILURE DUE TO LACK OF VERSATILITY AND ADAPTABILITY.

The utter helplessness and ineptitude of the Bengalis in business can best be illustrated by citing the following instances. In the districts of Barisal and Noakhali there are betelnut plantations. But the owners of these sit idle ; and the extensive export trade in betelnut is mainly in the hands of the Maghs (Arrakanese), Chinese and the Gujratis, who, as middlemen, reap a rich harvest.¹¹

The higher castes of the Hindus in the district of Barisal are congregated into certain small tracts, e.g. the villages of

¹¹ Cf. "The export of betelnut to Rangoon and Calcutta is the monopoly of Burmese, Chinese, and Bombay merchants all of whom have their agents at Patarhat drawing fat salaries varying from Rs. 1000/- and upwards per month. They live with their families and the place in the exporting season bears the semblance of a Burmese town. Not far from the steamer ghat are the boundaries of each merchant within which hundreds of maunds of betelnut are dried up daily or kept in stock ready for putting into sacks before exportation. Like the jute business in the Eastern Districts of Bengal this trade in betelnut is important in as much as the total export varies from 30 to 40 lakhs of rupees a year. But unfortunately for the people, the bulk of the profits derived from the trade of betelnut goes into the pockets of the middlemen". *The Bengal Co-operative Journal*, vol. xii, (No. 3, January, 1927), p. 218.

The writer, evidently, under-estimates the value of the betelnut export. Jack, in his *Bakarganj*, (1918), places the value of the betelnut at no less than three quarters of a crore, i.e., 75 lakhs.—*op. cit.*, p. 52.

In glaring contrast with the apathy and helplessness of the Bengalis, the activity of the Aradhyā (lit. to be worshipped) Lingayets of Shimoga (Mysore) may be cited. During my recent visit to the Bhadravati (a taluka of Shimoga) Iron Works I learned that, though occupying a respectable position in the social scale, the Lingayets take part as middlemen in the exportation of arecanuts worth about thirty lakhs; they are also grain dealers.

Banaripara, Batajor, Goila and Gabha etc. Only a few of this class can depend on their landed property. Most of them follow the beaten track. If they had pluck and energy, they could easily snatch away the profits of the middlemen in the betelnut business and retain every year some ten to fifteen lakhs in the district of their birth ; they could also thus live in comfort in their own homes instead of swelling the rank of the homeless intellectual proletariat.

Then again India imports from outside (via Singapore) two crores and a half worth of betelnut. If the college-bred youngmen would only increase the yield of betelnut by new plantations based upon improved scientific methods of agriculture, they could earn several additional lakhs. But as Mr. Jack pathetically remarks ; "The inhabitants of the district have little inclination for trade.....The only disquieting feature in the material condition of the people is to be found in the indigent circumstances of some portion of the higher caste Hindus, who form somewhat too numerous a proportion of the total population in the *sadar* sub-division and are therefore unable to obtain a subsistence by their traditional employments. *They have as yet displayed no versatility or adaptability.*" (The italics are mine).

So much for the betelnut trade. Let me cite another deplorable and pointed instance. The northern portion of Rungpur (chiefly included in the Nilphamari sub-division) grows a superior quality of tobacco, which is in much demand in Burma where cheroots (cigars) are manufactured out of it. From the Season and Crop Report of Bengal, 1928-29 (p. 16) it would appear that the normal area under tobacco was 138,200 acres ; taking the price per maund, calculated on the basis of the five years' (1924-29) average at Rs. 16 annas 6 and the yield per acre at 6 maunds, the total price of tobacco crop comes up to 1 crore and 36 lakhs.¹² But the lamentable feature

¹² The tobacco crop for the year 1928-29 was, however, a record one. The area under cultivation was 190,000 acres ; the total yield at

is that the marketing of this commodity is in the hands of the Burmese and the Khojas of Bombay.¹³ The landholders and lawyers of Rungpur send their sons to Calcutta to be educated at the Colleges and remit per month Rs. 45-50 for each for 4-5 years consecutively. The local college also is utilised by those who cannot afford the expenses of sending their sons to Calcutta. The young hopefuls after completion of their educational career find themselves stranded in the battle of life ; they either swell the ranks of the briefless lawyers or miserably-paid teachers and clerks. As I have repeated almost *ad nauseam* that had those "educated" landlords and lawyers turned their attention to improved methods of agriculture and to the distribution and sale of the produce of the land, they and their

12¼ mds. per acre was 23,27,500 mds.; the market price was Rs. 20 per md. These figures were in excess of the normal. Hence the total price of the crop jumps up to 4 crores and 65 lakhs, i.e., more than thrice the average of the last five years. As in the case of jute, the area under cultivation is largely controlled by the price-current of the staple.

¹³ List of some of the regular exporters of tobacco (unmanufactured) from Calcutta to Burma ports.

Messrs. H. Thye & Co., 2, Amratola Street, Calcutta.

„ H. T. M. H. Tayoob & Co., 12, Amratola Street, Calcutta.

„ H. E. N. Mahamed & Co., 19, Zakaria Street, Calcutta.

„ S. Dadabhoy Bros. 72, Canning Street, Calcutta.

„ N. J. Chand, 23, Amratola Street, Calcutta.

„ A. D. Bros., 146, Lower Chitpore Road, Calcutta.

Cf. also : "The Committee met one Gamiruddin of Kabaru, Police Station Kotwali, Dist., Rangpur, who himself locally cultivates 18 bighas of tobacco and is also a big Dalal (broker) dealing in tobacco business. Tobacco leaves are sold through these Dalals to merchants coming from different parts of India, *mainly from Akiyab, Moulmein and Rangoon*. There are as many as 500 Dalals in the locality and Gamiruddin is said to be a small fry among them; still he gave us an idea that his transaction annually amounts to over Rs. 50,000".—*Report of the Bengal Provincial Banking Enquiry Committee, 1929-30, vol. i, p. 321.*

From my own private inquiries I am in a position to corroborate the above. There are any number of dalals of the G(J)amiruddin type, who earn four times as much as an average graduate and who never have to leave their homes in search of miserably paid jobs.

children could have stayed in their own districts and villages and earned lakhs, I had almost said crores of rupees. Moreover, as the tobacco or the jute season barely lasts for more than three months, the remaining months of the year they could utilise in literary and agricultural and other pursuits.

The eldest sons of the peers of England due to the law of primogeniture inherit the ancestral landed estates, the younger ones often go to the agricultural colleges at Cirencester and elsewhere and after gathering elementary knowledge of the subject emigrate to Australia or Canada and become prosperous farmers. But our "educated" people have blindfolded themselves so to speak and can never move an inch beyond the beaten groove. It never occurs to them that by improving the methods of cultivation by application of manures and using superior strains of seeds the quality of the crop could be improved and its quantity increased. As it is they are content with leaving things as they are, the crude method of cultivation is allowed to be perpetuated.

This is all the more to be regretted as there is a Government tobacco farm at Burrihat (Rungpur) in which improved varieties of tobacco leaves are being introduced as also proper manuring methods. But the sons of the local gentry and land-owners do not evidently think it worth while to take advantage of the opportunity. Let me here reproduce the reply I received from the Superintendent of the Government Tobacco Farm, Rungpur which fully corroborates my statement:—"I regret to inform you that the sons of gentry rarely come to this Farm now-a-days to learn the improved methods of tobacco farming." It is indeed heart-rending to find the Bengali youngmen so very demoralised by their "insane craze for University degree" that they are even unable to avail themselves of the opportunities which lie at their doors, so to speak.

Then again, I find new trunk lines or branches of railways are being opened every year but all the contracts for these

undertakings are the monopoly of the Cutchis,¹⁴ Gujratis and Punjabis. Where is the Bengali? Echo answers! Where? In short, the want of versatility and adaptability as Jack puts it, is the most distressing feature in the young Bengali. As poet Kalidas says :—

रेखामावमपिच्छुखादामनोर्व्वर्त्तनः परम् ।

न व्यतौयुः प्रजास्तस्य नियन्तुर्नैमिहृत्तयः ॥

i.e. he cannot deviate by a hair's breadth from the beaten track.

III. THE NON-BENGALIS IN BENGAL TRADE.

But why enumerate isolated instances? The Marwari (as also the Gujrati) is here, there and everywhere. He finds out by a sort of instinct where money is to be made. Wherever he goes he manages to get a foothold, establishes himself permanently and the local hereditary traders and merchants, generally belonging to the Tili and Saha castes, go to the wall.

I can perhaps ceaselessly go on enumerating these dark and gloomy series of episodes in their tragic vividness which will prove to demonstration the miserable plight to which the Bengali has brought himself.

By and by the Bengali is being thrown out of Bengal trade. Aluminium utensils in the shape of tiffin-carriers, cooking pots, cups, dishes, basins, etc., are coming extensively into use in Bengali households ; but they are all manufactured by the Bhatias who have secured a monopoly of these articles throughout India. The process of making them is extremely simple. Thin imported sheets of the metal are hollowed into different shapes with the aid of the stamping and spinning

¹⁴ For instance, Mr. Jagmal Raja, a native of Cutch, is a labour contractor for the Bally bridge (across the Hughli, near Calcutta). He is also a big contractor for the coal raisings in several collieries. Mr. Raja is also a business magnate at Allahabad where he owns a glass works. How a single man, who according to our current notions, is barely semi-educated, manages so many concerns of divers nature scattered throughout the length and breadth of this vast peninsula, is a puzzle to the average degree-hunting Bengali.

machines. The Bengali graduates in science (M.Sc.'s) will recapitulate all the physical properties of aluminium, namely ductility, tensility, conductivity, as also their chemical properties. But the Bhatia knows nothing of these and yet makes a fortune from the uses of the metal.

In the mining industry also the Bengalis cut a sorry figure. In this field the Europeans are first and foremost. Among the Indians the Marwaris and Cutchis are in the forefront. They know nothing of geology and mineralogy ; but all the same they are always on the look-out as prospectors. They have secured large tracts of mining leases and are also proprietors of coal and mica-mines, which they work on their own account. The brilliant Bengali graduate, with his high-sounding Indian and foreign diplomas in Mining, Engineering and Geology, thinks himself fortunate if he can secure a job under them. The lac industry also finds the Bengali almost unrepresented. The Marwaris have followed in the track of the Europeans and are plying a roaring business. The important mica mines are in Kodarma (Bihar). Among the pioneers of the mica trade occur the names of a few Bengalis ; but the business is now practically the monopoly of the Europeans and Marwaris. The declared value of export of this mineral in 1926 and 1929 exceeded a crore of rupees. [Vide *Indian Mica* by R. R. Chowdhury (1932)].

The motor traffic is fast becoming the monopoly of the Punjabis who are also expert electric fitters. The artisans in the plumbing business are all Oriyas. The shoe-makers of Calcutta are either Chinese or up-country *chamars*. The cooks and menial servants in Calcutta as also in the provincial towns, are, as a rule, up-country men or Oriyas. All the labourers, including coolies on the railways, the crew in the country boats which ply on the Hugli and other rivers are chiefly Beharees or U. P. men. The barbers of Calcutta, Dacca and other towns are mostly non-Bengalis. The masons of Calcutta are being rapidly supplanted by up-country men. Not a single carter or coolie in Calcutta is a Bengali. In a Government

report on labour in Bengal (1906), it is stated that 20 years earlier all the hands in jute mills were Bengalis, but that at the date of the report two-thirds of them were immigrants. By 1918 about 90 per cent. of the labour was imported.¹⁵ The number of Bengali labourers is continually on the decrease and at the present moment it probably does not exceed 3 per cent. It is a significant fact that a little over half a century ago, the cooks, confectioners, barbers and boatmen were all Bengalis.

In the city of Calcutta again almost all the big sweetmeat makers', confectioners' and grocers' establishments are now run by the Marwaris or up-country Hindus. The Eastern Bengal Railway from the Sealdah terminus to Goaland as also to Santahar, Parbatipur, Jalpaiguri &c. runs through tracts occupied purely by Bengalis. But the sweetmeat vendors and refreshment stall keepers are Gujratis and Parsis. Any trade, in fact, which requires organisation and supervision is non-congenial to the Bengali.

In the days of my boyhood the *gowalas* (dairymen) of Calcutta were, as a rule, Bengalis; now they have become extremely rare. They have been entirely driven out of their profession by the hardy up-country dairymen, who not only keep a superior breed of cows and buffaloes but take care to feed them with better quality of food-stuff and nutriment, thereby ensuring a much larger yield of milk than is the case with the cows kept by the Bengalis. Not only in Calcutta, but also in provincial towns, the Bengali barbers and dhobies (washermen) are fast disappearing and their place is being taken by up-countrymen.

Of the many theories put forward to account for this disappearance of the Bengalis as artisans, domestic servants and labourers one is that it is due to de-vitalisation brought on by malaria. In proof thereof it is cited that in certain quarters of the districts of Burdwan and Hugli as also in

¹⁵ Report of the Indian Industrial Commission (1916-18), p. 11.

Dinajpur, colonies of Santals have settled permanently, and agricultural operations are to a large extent carried on through their aid. That there is some force in the statement cannot be denied ; but it is by no means the real or satisfactory explanation. The malaria theory may be partially applicable to the Burdwan, Presidency and Rajshahi Divisions. But the Dacca and Chittagong Divisions are as yet comparatively free from the ravages of this scourge, and yet even in these parts of Bengal the non-Bengalis are very much in evidence. How are we to account for the very large influx of Behari labourers in the Deltaic regions generally? Even the ferries of East Bengal are run by them.

In Khulna and Bagerhat and in the adjoining district of Faridpur, the big ferry ghats are, by auction, leased out to the highest bidders ; but the Bengalis living on the spot are incompetent to manage them. It may be mentioned that Chhatrapat Singh (an up-country man) is the lessee of all the ferries in the districts of Sylhet and Mymensingh. These ferries are auctioned to the highest bidders and are in the gift of the District Boards run entirely by the Bengalis. But the Bengali himself, if he secures a ferry, neglects his duties on account of his indolence and unbusiness-like habits and soon becomes a defaulter. Hence it has become customary for the U. P. non-Bengali, who often begins his career as a menial or cooly, to snatch away this source of income and monopolise it.

I have travelled extensively in East Bengal during the dry season after the subsidence of the flood and I noticed that the palanquin bearers come in batches from Behar and ply a brisk trade. Even in the remotest villages of Bengal I rarely come across any Bengali palanquin-bearer. Formerly, it was the custom for the local people belonging to the so-called lower castes to supplement their agricultural income by serving as palanquin bearers but now they would rather starve than undertake such a "humiliating" task. The fact is that a kind of languor, nay torpor and a false notion of dignity have overtaken the sons of Bengal.

The lower castes have, of late years, acquired a peculiar notion of dignity and self-respect and are too proud to work. They claim to be of Kshatriya and Vaisya (*i.e.* Twice-born) origin and obsessed with this notion refuse to carry any load or luggage or ply a boat, with the result that swarms of up-country coolies and labourers are invading Bengal, while starvation stares the Bengali in the face. The permanent settlement, which ensures fixity of tenure and comparative freedom from enhancement of rent of the ryots, coupled with the natural fertility of the soil, has also largely contributed to this deplorable state of things. But as has been shown elsewhere, the produce of the land but insufficiently supports the people and wherever there is a failure of crops they are on the verge of starvation.¹⁶

During the relief operations on behalf of the flood-stricken victims in North Bengal (1922), the headquarters were for nearly a month located in the camps pitched on the grounds of the Railway station at Santahar (*vide* chap. XVII). The havoc caused by the catastrophe and the sufferings of the people all around were indescribable and to add to their misery the usual cold north wind of November and onwards had set in. They would come shivering with cold, begging for blankets, clothing and weekly doles of food grains. There used to be in those days a colony of some four to five thousand up-country labourers and coolies at Santahar. As the broad gauge railway from Parbatipur to Siliguri had not then been opened, their services were constantly required for transshipping from the broad gauge to the narrow and vice-versa, as also for the permanent way repairs. But the famished people, although their dwellings were within easy reach of the station, could not

¹⁶ During the year (1928) some seven or eight districts of Bengal were in the grip of famine, namely, Burdwan, Bankura, Birbhum, a portion of Dinajpur (Balurghat), Murshidabad and portions of Jessore and Khulna; during the present year (1930-31) on account of the trade slump and the ruinously low price of jute, heart-rending cries of distress are being uttered.

be prevailed upon to undertake what they termed "Coolies' work" as they would thereby lose their *izzat* (self-respect or dignity). When the relief headquarters were shifted to Atrai, it was necessary to engage the services of a batch of up-country coolies on a monthly pay of Rs. 20/- each for the constant carrying of rice bags and bales of cloth from the railway station to the relief camps. No local men—though recipients of charity—would condescend to do what they called menial work. At times some local labourers were procured but they not only demanded high wages but worked in a half-hearted, slipshod manner.

IV. FAILURE DUE TO LACK OF INDUSTRIOUS HABITS.

The Chinese carpenters are fast elbowing out their Bengali confreres, not only because of their superior workmanship but also because of their industry and real ability. Man for man, the Bengali labourer or artisan is no match for the up-country man, as the latter again is no match for the Chinese.¹⁷ If a comparison be instituted between the Bengali carpenter and his Chinese counterpart the difference will be found to be immense, though both belong to the same strata of the society and though both are illiterate. The Chinese carpenter is found in Calcutta to rise step by step to undertake contracts in the railway and P. W. D. He starts carpentry works of his own, whereas the Bengali carpenter, often a Mussalman, is content with his daily wages and easy-going methods and never dreams of improving his position or lot. It is notorious that the

¹⁷ "In Calcutta, Hindu carpenters formerly were in the ascendency, but owing to the fact that youths of the younger generation are frequently not apprenticed to the trade, but encouraged to be clerks, they are giving place to Muhammadan and Chinese carpenters . . . the chief faults of the Indian carpenter are his neglect of accurate measurement, his carelessness with regard to the efficiency of his tools, and his lack of perception of the value of time as a factor in the execution of work. This fault of unpunctuality, I note, is attributed specially to the carpenter in the people's proverbs".—Cumming: *Review of the Industrial Position and Prospects of Bengal in 1908*, p. 16.

Bengali labourer or artisan will slacken in his assigned duty the moment he knows that there is no one to supervise his work ; so much so that this sort of negligence has become almost proverbial.

The up-country man is more active than the Bengali but the Chinese beats them all ; over and above he is highly conscientious. A Chinaman never shirks his duties. Whether his master's eye is on or off is immaterial to him ; he exacts higher wages it is true, but gives a better quality and quantity of work. Another important difference consists in this that the Bengali or the up-country artisan has no desire to improve ; he follows his traditional path ; does his work as a dull, dreary routine ; whereas the Chinaman has not only a clean record but takes pride in, and throws his heart and soul into, his work. Every day he improves and no clumsiness is discernible in his piece of workmanship. Unfortunately he has his vices too ; and though he is slowly giving up his opium-smoking he is still a notorious gambler. The Chinese, however illiterate he may be, is plucky and adventurous. He swarms in Rangoon and the Malaya Peninsula and to a certain extent on the Pacific coast in America ; colonies of Chinese are to be found in Paris, Amsterdam and Manchester, who earn their bread as petty-traders, labourers, etc. In fact, the Chinese will thrive in any latitude ; equally as well at the poles as in the tropics. The Bengali workman, on the other hand, is not resourceful ; he can seldom accommodate himself to altered conditions in these days of rapid change. He would rather starve than leave his ancestral homestead. The Mussalmans of East Bengal, not being slaves of caste prejudices, are known to be more daring and adventurous. As Sarangs (captains) and lascars (crews) they ply the steamers in the inland river navigation. They also often form the bulk of the lascars of the ocean-going steamers of the British Indian, P. and O. and other companies. They often leave their congested paternal glebes and colonize on the *chars* of the Padma and in the wilds of Assam, where they reap abundant harvests of rice and jute ; all the same

they cannot stand competition with their formidable rivals from upper India not to speak of the Chinese.

The small tanneries, as also the shoe-trade of Calcutta, are almost entirely in the hands of the Chinese, Jat Mussulmans, and up-country *chamars*. The following passage will bear me out :—

“There are in Calcutta about 250 Chinese shoe-shops which, between them, employ eight to ten thousand *mochis*. The usual practice is that the Chinese themselves put together the “uppers” of the shoes, while the *mochis* stitch on the soles and the heels. The rate of payment for this work varies between 12 annas and 14 annas, and in some cases, where skilled work is involved, even Re. 1/- is paid.”—*The Statesman*, Oct. 1930.

If the mean figures be taken, namely, nine thousand and if the average earning be taken as annas thirteen—the wages earned by the *mochis* will amount to about twenty six lakhs of rupees per year. There are a few thousand more *mochis* employed by the U. P. shoe-shops ; a few thousand again do business as shoe-makers on their own account and at the above rate of wages they would be easily earning another twenty six lakhs. Incredible as it may appear, the non-Bengali *mochis* thus earn somewhere near fifty lakhs or half a crore of rupees a year.

Round about the town of Dacca the *chamars* who have no trade to ply are in a chronic state of starvation. They are the most depressed amongst the backward classes of Bengal. They are not ashamed to beg for their livelihood ; they could easily earn a rupee or at least twelve annas a day if they would only hawk about as menders of old shoes or set up as cobblers. But this occupation has been captured by the *chamars* from U. P. and Bihar. Indolence and want of initiative are at the root of their sad plight. The great Serampore Missionary William Carey was not ashamed to own that at one period of his life he was a cobbler. Stahlin the successor of Lenin in his struggling days “cobbled shoes”. But a fancied loss of dignity permeates our social system from top to bottom.

An enterprising young Bengali after three years' training at the Government Research Tannery has started as a shoe-maker ; he often employs in his establishment ten up-country *chamars* each of whom turns out a pair of shoes a day working ten to twelve hours at a stretch with barely an hour's interval for meals, thereby earning Re. 1/10/- per day, or Rs. 50/- per month ; he tells me that a Chinaman though he would not consent to serve on less than Rs. 100/- per month would prove to be cheaper in the long run as he works harder and his finish is superior. The Chinese are as industrious as the proverbial bee. They utilise every moment of daylight and do not waste a minute. Their women are equally active and do not indulge in sleep during the day as do their Bengali sisters. Behind the shops in the family quarters they are very busy in washing the clothes in the tubs or plying the machine to stitch the "uppers". It has been calculated that the Chinese colony of Calcutta earns a crore or more of rupees in the shoe and tannery trade alone. Over and above that the Chinese carpenters earn several lakhs a year.

V. FAILURE DUE TO WANT OF ENTERPRISE AND INITIATIVE.

Then again when I first came to Calcutta all the spice merchants were Bengalis ; now this trade has been wrested from their hands by the Gujratis.¹⁸ Take another instance. When the boycott of British goods was first started during the Partition of Bengal movement, the *swadeshi* cigarette or the

¹⁸ The very term *gandhabanik* in Bengali means a spice merchant, who up till recently had a monopoly of the trade.

I append a list of some of the important spice merchants. Armenian Street : Ramchandra Ramrichpal ; Janakidas Jugannath ; Rauthmall Kanaialal. Amratola Street : Ratanji Jibandas ; Ramlal Hanumandas ; Gopiram Jugalkishore ; Sukdeo Jaharmall ; N. Jagatchand ; Jugannath Matilal ; Jesoram Hiranand ; Surajmall Satulal ; Tarmohamed Jalu ; Dauji Dadabhai Hossain Kasem Dada ; Haji Ali Mohamed ; Haji Ali Sew Mohamed ; Matichand Deokaran.

It will thus be seen that the Bengali has been completely ousted from his hereditary trade.

biri came into vogue. In Calcutta it was a happy sight to see hundreds of street Arabs who were living a questionable life taking to making the *biri* and thus earning an honest livelihood. The *biri*, however, came into use only among the lower classes, e.g. the carter, the cabman, the coolie etc.; it was eschewed by the upper and fashionable set. The Gujrati, always on the look out for fresh fields and pastures new, was quick to realise that if it could be manufactured on a large scale near the source of the raw materials and where labour is exceedingly cheap, a thriving trade would spring up. Accordingly, he chose Central Provinces as the venue of his operation. Gondia on the B. N. Ry., where the Jubbulpur junction begins, is just the suitable spot. Here the soil is arid and the inhabitants are hard put to, to eke out a subsistence and wages are very low. Moreover, the forests round about abound in *sal* and *kendua* trees with their broad leaves serving as wrapper for the *biri*. Tobacco is imported from the Bombay side ; but it is much nearer Gondia than Calcutta or Lahore ; hence the advantage in freight also. It is a purely home industry and no machinery is used. There are some big concerns one of which I visited in 1926. They are merely depots for distribution (of raw materials) and for collection (of the finished product, *biri*). Thus a thriving trade or industry has sprung up, which, I was assured, was the means of bringing bread to the mouths of some fifty thousand people. The factory was turning out ten lakhs worth of articles a year. Since the recent swadeshi movement this trade has got a fillip, as all sorts and conditions of people (at least in Bengal) have kindly taken to it and an extensive lucrative business has thus grown up, bringing in lakhs of rupees as profit.¹⁹

¹⁹ The importance of the *biri* trade will be apparent from the fact that in 1928-29 the total value of imported cigarettes exceeded two crores of rupees. As owing to the Swadeshi movement imported cigarettes are being slowly displaced by the indigenous *biri*, manufacturers of this article are reaping a golden harvest. An extensive

Let me bring this sickening tale to a close. There have sprung up hundreds of shops for the disposal of *loha* and *lakkar*, literally scrap iron including parts of machinery. Up-country men, who a few years ago, started as labourers and coolies, began to purchase small lots of scrapped plants and machinery at the auction sales. Now they have guilds of their own. They are always on the look-out for second-hand articles and even pool their resources for buying worn-out steamers. In their shops one can find pulleys, chains, boilers, rivetting bolts, screws, toothed-wheels and odds and sundries. Needless to say that the Bengali is nowhere.

Unfortunately, the University commits an egregious blunder—a blunder worse than a crime—by creating Degrees in Commerce. The student is fed with the hope that by going through a prescribed syllabus of studies and qualifying himself for a *bachelorship in commerce*, he will be equipped with the requisites for success in the world of commerce. The B. Com. has his brain stuffed with theoretical nonsense and realises his mistake when it is too late ; he will talk glibly or reproduce from memory page after page of his text-book shibboleths. As he reads Economic Geography and Economics he has at his finger's end all about the supply and distribution of cotton, jute and cereals. The illiterate *biri* manufacturer, who has

trade has also recently sprung up for the supply of raw materials, namely, powdered tobacco of a particular description as also *kendua* leaves. The following are some of the important Firms dealing in *biri* and its raw materials :

Moolji Sikka & Co., Ezra Street ; Bhola Mia, Canning Street ; Chunilal Purustom, Chitpur Road ; Kalidas Thakursi, Amratola Street ; Bhailal Bhikabhai, Amratola Street ; Moni Lal Anondgi, Harrison Road ; Satish Chandra Chandra, Harrison Road.

It will thus be seen that there is only one solitary Bengali Firm. The *biri* factories are mostly located in the Central Provinces on the B. N. Ry. line, in Sambalpur, Bilaspur, Champa, Hemgiri, Gondia, Gidhour &c. where labour is cheap ; some of the smaller factories employ 200 hands or more while in some of the bigger ones as many as 2,000 hands find employment.

probably never looked at the map of India, has, all the same, mapped out before his mind's eye, all the important spots in India where raw materials and cheap labour are available, and he knows by instinct as it were, how to turn them to account. The unfortunate Bachelor of Commerce is only too eager to secure a petty job in a Marwari or a Bhatia firm as correspondence clerk. His vaunted learning ends in smoke. Blind, thoughtless copying of European models is responsible for this huge waste of the energies and precious time of our youth. It is forgotten that England is a highly organised industrial and commercial country. It is necessary there that the economics of Industry and Commerce should be made a special branch of scientific study. But the Bengali has yet to develop talents and capacity for the essentials of modern business methods. Moreover, in London, lectures which are given in day time are repeated in the evening classes for the benefit of junior employees and apprentices in banks, railways and business houses. With us it is thus a case of the cart before the horse.

In a previous chapter (*vide* chap. XVIII) it has been shown how the craze for degree incapacitates the Bengali youth who fights shy of the rough and tumble of the world for success in business.²⁰

²⁰ It is remarkable that the craze for university degree with its consequent follies has lately seized American youngmen and women. Repeated references have been made about their pluck and sturdiness but even they are now falling easy victims to the seductive charms of "soft jobs and professions." Thus we read in *The Hindu* (July 20, 1932) :—

"The desire for unhealthy speculation is greatly accentuated by the craze for soft professions in America. Everyone wishes to become a doctor or lawyer or real estator or advertising agent or professor. There is no incentive for hard work and manual and agricultural labour is mostly done by the coloured immigrants. The supply of members in these blackcoated professions is greater than the demand and consequently there is widespread unemployment. Commander Kenworthy says that in New York there are as many as 20,000 lawyers most of whom have no work. A well known English author and traveller, who

The Marwari or the non-Bengali immigrant as a class has a low standard of living at the early start in his career ; he manages to subsist on the irreducible minimum ; he is quite willing to do manual work and toils incessantly from early morning till 10 o'clock at night with only brief intervals for meals and thus is in a position to outsell and outrade the indigenous traders. It is now easy to realise why America (The U. S. A.) has enacted stringent regulations against Asiatic immigration. John Chinaman living on a handful of rice and spending nothing on drink becomes a formidable competitor in wages against his white brethren and as a hawker or petty trader can afford to sell on a much lower margin of profit. In fact, the Immigration Act, however it may be represented by the Asiatic, was prompted as an act of self-defence and is based not so much on racial discrimination as on economic grounds.

It is a pity that the Bengalis are getting out of the field of business and commerce of Bengal, undoubtedly for their own fault. Thus an well-informed correspondent in the *Statesman* (Feb. 11, 1931) writes :—

“When I first hailed from Bombay in the nineties of the last century most of the trade was in the hands of the Bengalis ; but for want of enterprise accompanied with honesty they have been slowly pushed aside not only by the Europeans, but also by the Marwaris, Khojas, Bhattias, Madrasis and the Parsis.

has toured in the States extensively, has told me that the legal profession is the most miserable profession in the United States. It may be that half the lawyers in New York have not the money to buy a five cents newspaper : but still the fact remains that new entrants are joining the profession in as great a number as in the past. The number of graduates turned out by the universities every year is estimated at 120,000, and not even a quarter of this number are able to find employment. The Education Department Statistics reveal, to take one year as an example, that in 1928, 563,244 men and 356,130 women took their degrees at the university convocations. It is this revulsion to manual labour that is one of the potent causes for the widespread unemployment in the States.”

Bengali merchants were all-powerful in all cases of important trade such as rice, jute, sugar, salt, etc. But from this date Ralli Bros., changed their brokers from a Bengali firm to a Marwari firm. That firm is still carrying on the brokerage business in piecegoods for Ralli Bros., under the able guidance of Sir Hariram Goenka. Now naturally a Marwari firm having secured the brokerage business of a very large firm, that firm as a natural corollary brought in Marwari dealers and ever since that date the Marwaris have gradually driven away Bengalis from all classes of trade. It is a well-known fact that to-day nearly 80 per cent. of jute shares are held by the Marwaris.

I can give one more instance to show how Bengalis are losing trade for their defects. In Radha Bazar Street originally all the woollen merchants were Bengalis who never opened their shops before midday and what we see as a result of this lethargy is that the Boras (a Mohommedan tribe of Cutch) have driven away almost all the Bengali woollen merchants as this hard-working community open their places of business at seven or eight in the morning with the result that persons making their purchases early in the day have flocked to these Bora shops."

A few decades ago almost all the banians (mutsuddis) of the European houses were Bengalis. Below is given a list of some of the notable ones :—

Gora Chand Dutta (Crooke Rome & Co.); after his death his son Chandi Dutta entered into partnership with one Chandra Dhar of Chinsurah and carried on the business. Later on one of their sub-agents, Ghursamal Ghanasyamdass, became the banian of the firm—the Bengali losing his ground.

The firm of Prankissen Law & Co., were banians of eight European Houses among others, Graham & Co., Pickford Gordon & Co., Henderson & Co.; Abhoy Charan Guha son of Shib Ch. Guha was banian of nine European Houses, e.g., Graham & Co., Pill Jacob, Swiney Kilburn & Co., Sacherstein & Co.; Lalit Mohan Das (died about 1890) was banian of Geo. Henderson & Co., Chartered Mercantile Bank, Ltd., Rose & Co., and Ralli Bros.; Dwarka Nath Dutt (as well as his son Dharendra Nath Dutt) was banian of Ralli Bros. (piecegoods department).

I have before me an interesting booklet entitled—*A Short Account of the Residents of Calcutta in 1822* by Baboo Ananda Krishna Bose (1st grandson by daughter of late Raja Radha Kanta Deb) ;²¹ it contains a list of the wealthy men of

²¹ Published by his grandson, J. K. Bose.

the town, including *residents who became rich by trade and business*. I select a few names only (old spelling retained) :—

1. Bysnubdoss Sett—He was an old inhabitant of Calcutta and a virtuous and respectable man and very rich; he as well as his forefathers were Dewans for the purchase of piece-goods for the Honourable Company; all the Setts and Busakhs of Calcutta are his kins and relations.

2. Ameerchund Babu—He was first Jumadar of the Export Ware House and then having acquired money by trade became Contractor of the Honourable Company's whole merchandise and purchaser of all the goods imported by individuals and thereby earned upwards of a crore of rupees. He was a charitable man and lived at Burrabazar and supported all the Sikhs of his class here.

3. Luksmikant Dhur—He was a very opulent man and Banian to several former Governors and Colonel Clive; he died without issue and was succeeded in his immense fortune by his daughter's son Moha Raja Sookhamoy Roy (who obtained the title of Raja at the time of Marquis of Wellesly and was a Director of the Bank of Bengal).

4. Sobharam Busakh—He was an opulent native of Burrabazar and seller of piece-goods to the Honourable Company and traded in various articles.

5. Ramdulal De Sircar—He was first in the service of Mudunmohun Dutt and acquired almost incredible opulence by serving Messrs. Fairlie & Co., and American Captains as well as by trade on his own account and lives at Simleah in Sootanooty.²²

6. Gobindchund Dhur—He is son of Nilmoney Dhur, Banker, and acquired wealth by serving European Ship Captains.

The most notable feature is that in the above list there occurs the name of only *one* non-Bengali.

It is of interest to note that the first jute mill on the Hughli as also the first important bank in Calcutta on modern

²² "Unlike the other foreign traders who dealt exclusively with the European Agency Houses, the Americans transacted their business through Indian merchants or brokers whose charges were very much lower. The most important of them was Ramdoolal De, a Bengali gentleman who began his career as a clerk on Rs. 4 or 5 a month and rose to the position of one of the foremost merchants in Calcutta. He died in 1824, leaving a large fortune of about £400,000."—J. C. Sinha : *Journal of the Asiatic Society of Bengal*, N.S. XXV, 1929, pp. 209-10.

lines were started mainly with the capital and co-operation of Bengali financiers. Today they are nowhere.

"The first jute spinning machinery on the Hughly was introduced by George Ackland; he arrived in Calcutta in 1852-3, where he made the acquaintance of Baboo Bysumber Sen, a native banian (financial agent) * * * Here (at Rishra), then, about the middle of 1855, the first Indian machine jute spinning mill was cradled. * * * For three years Ackland carried on the business in company with his native partner."—D. R. Wallace : *The Romance of Jute*, pp. 7 and 11.

"The next in point of age is the National Bank of India, established in 1863, under the name of the Calcutta Banking Corporation, which was changed to the present name on March 2, 1864. The Head Office was at first in Calcutta, but was transferred to London in 1866. As a result of this, the bank lost its predominantly Indian character. It may be recalled in this connection that at the time of transfer, four out of seven directors were Indians *viz.* : Babu Durga Charan Law, Babu Heralaul Seal, Babu Patit Paban Sein and Maneckjee Rustamjee Esq. Of the two auditors one was a Bengali, Shyamachuran De Esq. The paid up capital of Rs. 31,61,200 at the time was increased to £4,66,500, requiring representation of non-Indian interests on a wider scale."—*Report of the Bengal Provincial Banking Enquiry Committee*, 1929-30, vol. i, p. 45.

VI. CLERKDOM AND FAILURE OF THE BENGALIS.

Now we find that the Bengali is being driven from post to pillar and pillar to post ; he is being elbowed out of every career save that of an ill-paid clerk, and even in this field the Madrasi has entered the list and will soon drive him out. It may be said that the clerical career is so interwoven with our past that it has become a part and parcel of our nature ; like habit, a second nature.²³ 'Clerking' is so congenial to the Bengali that even scions of well-to-do families take to it as the fish to the water. It has been a common practice during the last half-a-century and more for the Bengalis (especially among the Suvarnabanik Community) to secure Cashierships or Assistant

²³ In my public addresses I have not hesitated to include, Munsiffs, Deputy Magistrates, Personal Assistants (P. A.'s to Commissioners, Inspector-Generals, etc.) and even Accountant Generals among "glorified clerks".

Cashierships in European Mercantile Firms and Banks on depositing gilt-edged securities of the value of a lakh of rupees or more and yet they won't embark upon any trade because of the risks involved. Nothing venture nothing gain is a trite saying but it is lost upon our people. While sending this portion to the press, I happen to cast my eyes on this choice morsel :—

THE MERCHANT'S CLERK.

To The Editor,

Sir,—When Commercial Magnates like Lord Inchcape and such responsible(?) personages talk about India being so much indebted to them and that they have provided a living for so many Indians etc. etc., it makes one sick in that while these commercial people may claim the privilege of having provided this ignoble living, the beggar's bowl, to the poor Indian clerk, the service that he extracts of the clerk is out of all proportion to the remunerations paid therefor. Just imagine the poor Rs. 30 clerk, doing his boss's correspondence, very often even correcting his bad grammar, doing his boss's filing work, arranging all references and having all references at his fingers' tips, possessing a very good and keen memory, remembering things that took place in the business even a decade and duo-decade back, doing the boss's private work, as Secretary of the Cricket Club, Boating Club, Swimming Club, Boy-Scout Work, Consulate work, running when his boss asks him to do it, shouting when he is asked to do so, doing the Memshaib's private work too, such as correspondence of the Ladies' Club etc. etc. What a noble work compared to the pittance of Rs. 30 paid to him! If you do not call anything "prostitution of one's intelligence" this is what you should call so.

* * * * *

If any commercial firm (I mean foreign firm) built its fortune in India, it was on the intelligence of the Indian clerk and his industry and energy and if any one hailing from the Continent or America or elsewhere has got rich in business, it is because of this faithful service rendered by the Indian merchant's clerk.

* * * The commercial man from the West robs the poor Indian clerk of his brains and industry, gets rich quick, leaving the clerk, a sickly, good-for-nothing, useless creature, unable to stand on his own, and unworthy of the traditions of his once glorious Motherland. * * *

Calcutta, the 30th April 1932; *A. B. Patrika*, *dak* ed., 21/5/32.

The most distressing innate defect in the Bengali mentality comes out in bold relief in the above letter. There is not a

word about the inherent incapacity of the Bengali in trade and commerce. His only complaint is that his European master who exploits his brain and energy does not pay him adequately ; in other words, he takes for granted that the Bengali is born and doomed for ever to "clerking" and he would be happy with his lot if he were given only higher wages. It never occurs to him that not only the European but also the Marwari and Gujrati office-masters exact from him similar task. The M.Sc., B.L., unable to earn his livelihood, in a scientific career, for a time tries his luck at the bar and swells the rank of the briefless pleaders and at last in despair joins a school of commerce to learn typing and precis-writing and is too glad to serve as a correspondence clerk to the firms of the above nationalities on a bare pittance. The writer again ignores the simple fact that the question of remuneration is settled by the law of supply and demand. The starving Bengali—educated or semi-educated—has his eye on the "Wanted" columns of newspapers. When for a clerical job carrying a pay of Rs. 30/- to 40/- there are several hundreds of graduate applicants some of whom even hinting that unless their cases are favourably considered, they with their families are sure to starve, it is hopeless to expect high wages. Moreover, their Madrasi competitor is on the scene, who has learnt to perfection the art of keeping body and soul together on the irreducible minimum of cheap food stuffs; and he, generally also a graduate with better command of English, agrees to serve on less pay. In a word, the mentality of the helpless clerk is strictly comparable to that of the slave in *Uncle Tom's Cabin* ; he is quite contented with his lot ; the only thing he, bargains for, is that his "mas'r" would treat him with a little more consideration. He is quite ready to work like a galley-slave or a bullock yoked to an oilmill provided he is guaranteed a fixed pittance ; but with all his brains he will never try to earn an independent livelihood ; never ! never !! never !!! that of course must be reserved for the European and the non-Bengali. Here is again a typical eloquent corroboration of what I wrote years ago on *the*

Bengali brain and its misuse or “the prostitution of his intelligence”.

The poet of human nature not only anticipates the “Bengali clerk” but administers him a homily when he says :

“He shall but bear them [loads] as the ass bears gold,
To groan and sweat under the business,
Either led or driven, as we point the way ;
And having brought out treasure where we will,
Then take we down his load and turn him off,
Like to the empty ass, to shake his ears,
And graze in commons.

Octavius : You may do your will;

But he’s a tried and valiant soldier.

Antony : So is my horse, Octavius ; and for that,

I do appoint him store of provender.

It is a creature that I teach to fight,

To wind, to stop, to run directly on,

His corporal motion governed by spirit.”—*Julius Cæsar*.

More than a millennium and a half ago the great *Rishi* *Susruta*, one of the founders of our *Ayurveda* System, uttered in a pithy aphorism what Shakespeare has said about the beast of burden :—खरचन्दनभारवाही भारस्य वेत्ता न तु चन्दनस्य—i.e. the ass, carrying on its back the load of sandal-wood, is only conscious of its weight but not its fragrance.

The “Merchant’s clerk” forgets that the purely *Indian* Firms also (as in Bombay) give the clerks a pittance at the market rate and thrive at their expense. Clerks are clerks and have no salvation.

The *Englishman* writing ten years ago (Jan. 25, 1922) also predicted that the Bengali clerk is doomed to extinction.

CALCUTTA’S CHANGING POPULATION.

Under the above caption the paper thus describes how the Bengali is being elbowed out of his position of vantage :—

“When people talk of the vast changes that have taken place in Calcutta during the last twenty years they are rather inclined to dwell

upon the improvements that have been effected generally in the amenities of life and in the material aspects of the city such as roads, buildings, lighting, sanitation and so on. They entirely overlook the greatest change of all which is that *Calcutta is ceasing to become a Bengali town* and that every year sees an enormous influx of foreigners whose intention it is to settle and earn their living in the city. These foreigners come not only from other parts of India but from every part of the world. With regard to the last the process ceased during the War, but it is now proceeding with redoubled activity. It is true that the Germans have gone altogether but they are already being replaced by Americans who are quite as resourceful and as determined to stay. Then in another strata are to be added various races from the Mediterranean who are entering into active competition with the Bengali shopkeepers. A third class consists of refugees from the Middle East and Armenia who are finding in Calcutta conditions which permit them to earn a living at the expense of the Bengalis. But the Chinese quarter continues to grow and in some trades, such as shoemaking and carpentry, the Chinaman has almost entirely ousted the local artisans.

But it is from India itself that the Calcutta Bengali, whether Hindu or Mahomedan, is suffering the severest competition. Twenty years ago it was possible to point to the largest and most thickly populated parts of the city and to say that they were inhabited solely by Bengalis. Today that statement is not true of any quarter. The Marwari influx began, of course, some time before the War, still it is hardly more than fifty years old. Prior to that time the banians and shroffs and middlemen and dealers who were building up the wealth of the city were all Bengalis. Burra Bazar was a Bengali centre from whence radiated the threads of commerce and industry. Today when one speaks of Burra Bazar one means the Marwari quarter. Marwaris settle big questions of finance in Calcutta and throng the marts and exchange and in the smaller ways of shop-keeping and retail Punjabi banias and modis from the United Provinces are pressing into the bazars and putting up strange signs in their own languages in the bye-lanes. We have referred on several occasions recently to the advantage Bombay borahs and Afghan traders have taken of the piecegoods boycott in Calcutta, and having once got a footing it will be very difficult to turn them out. Again, in the sphere in which it was believed that the Bengalis had a monopoly that could not be shaken because of their education, that of supplying clerical labour, they are being attacked by Parsees and Madrasis.

The time is not far distant when the Bengali clerk will be as rare in a Calcutta office as a Bengali broker. As an artisan and mechanic in this city the Bengali is being replaced by the Sikh. In the region of unskilled labour, Uriya and Poorbeah coolies have almost everything

in their hands. Twenty years ago domestic service was practically supplied by Bengali Mahomedans. Today these men are being replaced by Gurkhas and Pathans. One could go through the whole range of employment and everywhere the story would be the same. The palaces are occupied by Marwaris and the gates are guarded by Rajputs. Now although the fact, that the population of Calcutta is becoming cosmopolitan, seems to escape general notice the other fact that the Bengali is being ousted from his profession has been frequently written about by Bengalis themselves, who have grown into the habit of speaking of their race as *dying*."

It may be added here that within the last 8 years the influx of the Madrasis and the Punjabis has steadily increased.

VII. THE ECLIPSE OF BENGAL.

It will thus be seen that in the struggle for existence, unable to face competition with the sturdy sons from the other provinces, the Bengali has succumbed all along the line. Even in the field of politics and economics he has begun to lose ground. The following article which has recently appeared in the *Manchester Guardian* from the pen of its special correspondent in India deals with this *Eclipse of Bengal*. The views expressed here are as discriminating and sympathetic as is generally the case with the Indian correspondents of that influential journal. The article in short summarizes all that I have been urging so long and is of much importance as it enables us to see "as others see us":—

One of the most noticeable features of Indian politics during the last decade has been the eclipse of Bengal.

Even after Calcutta ceased to be the capital, Bengal retained for some years the intellectual leadership of India. The West might produce its great men, like G. K. Gokhale and Bal Gangadhar Tilak, but in literature and science, as well as in politics, Bengal could and did claim that what it thought to-day the rest of India would think to-morrow. The Bengali is now awakening to the fact that his leaders are very old men, that no one is taking their place, and that whether at Delhi or inside the Congress his representatives have little influence. The political centre of gravity is shifting northwards and westwards.

WESTERN PREDOMINANCE.

The predominance of the Western Indian businessmen is a new feature in Indian politics. The Chitpavan Brahmins, who used to lead nearly every political movement in those parts, had very little in common with the mill-owners of Bombay and Ahmedabad, and it was only after the death of Tilak, the most orthodox of Brahmins, that the industrialists began to become a force in politics. They have undoubtedly gained by the ascendancy of Mr. Gandhi, a Gujerati and a man of their own caste. He has made it easy for them to come into the Congress, and they soon established their position there by means of heavy contributions to the party funds. Once having discovered that politics is not a difficult pursuit for the very wealthy, the western Indian industrialists have accumulated more and more power. Inside the Congress they were the moving force behind the boycott the effect of which has been much the same as heavy tariff in favour of cotton goods, and they have taken steps that it should be kept up as an economic weapon even after the Gandhi-Irwin pact.

It will be remembered that this only stopped the use of pickets for an anti-British boycott, and not for anti-foreign propaganda. It is probable that Mr. Gandhi himself would have been glad to see the end of all picketing in the bazars for it is always liable to lead to disorder, but in this matter he had the industrialists within the Congress strongly against him, and he could not go beyond the letter of the pact. On this subject the *Bombay Chronicle*, which voices the opinion of the mill-owners, is directly opposed to Mr. Gandhi.

THE BENGALI AND THE MILL-OWNERS.

The Bengali nationalist may be prepared to make some sacrifice in order to help the homespun khaddar, but he has no desire to pay more for his cloth merely to benefit the Marwari or Gujerati cotton manufacturer. The Bengal industry is jute, which is almost entirely exported, and Calcutta businessmen of all races are beginning to see themselves as *the milch cow of India*. This feeling has been strengthened by the success with which the western industrialists have captured such bodies as the Federated Chamber of Commerce and forced their views upon the Government. The new policy regarding salt will put a very heavy burden on Bengal in order to help a few Parsee merchants of Karachi and Bombay.

TOO MANY BLACKCOATS—LOSS OF INITIATIVE.

The decline is so noticeable that it has aroused considerable discussion amongst Indians themselves. *Many blame the university, which*

has certainly helped to create the enormous army of middle-class unemployed, which is such an unhappy feature of modern Bengal (the italics are mine). For many years the landlord class have tended to drift into Calcutta, and their children appear to have no ambition above some small clerical job at a fixed salary. It is a curious malaise which seems to affect the *bhadralok* of the province that the young men lose their ambition, and even the children of wealthy parents will be content with some dull mechanical work, while men from other parts of India are ousting the Bengali from nearly every line of business and every work which requires initiative. It is absurd to place all the blame on the system of education; it would seem to some inherent weakness which keeps the Bengali living in the past, proud and ineffective.

While sending this to the press I find a thoughtful contributor to the *Liberty* (11-8-32) who signs himself as "N. C. R." almost reiterates the views of the *Manchester Guardian* correspondent :—

"It would be ignoring facts to say that since the birth of the present century, the Bengalees have produced only camp-followers and no leaders and have played only a second fiddle to the other provinces of India. It has to be acknowledged that till the close of the first decade of the present century, Bengal possessed and enjoyed the palm of leadership in India. During the days of the anti-partition agitation and the Swadeshi movement, the hegemony in Indian public life was undoubtedly vested in the Lower Provinces of Bengal. During the next years, however, Bengal had to come down from this position of supremacy to one of equality with the other provinces. These latter had now organised and developed their political life and brought forth leaders and workers who could hold their own in any debate and controversy with those from Bengal. This position of equality was maintained till the close of the Great War. * * * * But as it would be foolish not to acknowledge the contribution of Bengal to the leadership in Indian affairs during the first quarter of the present century, so it would be equally unwise not to recognise the fact that Bengal is no longer where she had been in the days of the great Victorians.

VIII. ANNUAL ECONOMIC DRAIN OF BENGAL DUE TO FAILURE OF THE BENGALIS.

It is not necessary to pursue further. The last Census Report tell us that there are in Bengal 22 lakhs of non-Bengalis, i.e. Indians from other Provinces. They go home periodically either during the slack season or at intervals of a year or so

leaving substitutes from among themselves. If the East Indian Railway passenger traffic be examined it will be found that a constant stream of immigration is kept up. Very few of them bring their wives and children with them. (Cf. *ante* p. 425.) The Marwaris, Bhatias and a few others who are domiciled in Bengal live with their families generally in Calcutta. Of the 22 lakhs a deduction of 2 lakhs may safely be put down as women and children, i.e. non-earning members. Even a cooly or dhobi or shoe-maker or barber seldom earns less than Rs. 25/- to 30/- a month. If one were to turn the pages of the *Exchange Gazette* or *Capital* and note the daily transactions and also critically examine the "clearing house" he would have no difficulty in realising how much of the floating capital or fluid money and actual wealth of Bengal is in the hands of the Marwaris, Bhatias and other prosperous participants in trade, commerce and business, a good many of whom are millionaires.²⁴ The Bengali cuts a very sorry figure indeed.

I think it will be a fair estimate if Rs. 50/- per month be taken as the average earning of each member of this class, and multiplied by twenty lakhs the total comes to ten crores. In other words, 120 crores represents the annual drain of wealth of Bengal.²⁵ I have tried, as far as possible, to sub-

²⁴ The Census Report of 1921 shows that 47,865 persons born in Rajputana Agency and 11,235 persons born in the Bombay Presidency were resident in the province of Bengal. Of the former not less than 12,507 born in Bikaner and 10,316 born in Jaypur were found in the city of Calcutta alone. The author of the Census Report pointedly remarks that there is a "clear indication that upcountry mercantile classes are taking a larger and larger part of the city's trade and it seems that they are doing the same outside the city also." He also attributes the increase in the number of immigrants into the province from Bombay as "due to the increasing influx of the mercantile classes hailing from that province."

Since the recent Swadeshi movement the agents of the Bombay (including Ahmedabad) mills are coming in larger numbers and securing the control of the 'cloth market' and are doing a thriving business.

²⁵ The figure may appear incredible, nay staggering to many. In support and corroboration of it I can adduce direct evidence. The total

stantiate my statements with facts and figures. No accurate figures exist on which to base any definite estimate and I give my own guess for what it is worth. I am, however, often confirmed in my own estimate by opinions of experts which I did not come across until my own figures had been arrived at. It is by no means an easy task to give a scientific or exact estimate of the magnitude of wealth drained from Bengal to Bombay, Rajputana, Bihar, the United Provinces and the Punjab. But the figure offered here is an indication of the numerical region in which we ought to consider it.

amount of money orders issued by the Post Offices serving the Calcutta Jute Mills during the year 1929 is given at Rupees one crore and seventy-six lakhs in round number.—*Indian Jute Mills Assoc. Rep.* 1930, p. 292.

A Bengali gentleman of position practically domiciled in Bihar writes me as follows :—

"I am grateful to you for the interest you are taking in the welfare of the Bengali residents in Bihar and other provinces. * * * * * Last month the post office of Chapra received ten lakhs of rupees from Bengal; it represents the net amount transmitted to the district of Saran alone.

"I give below the money order remittances from Bengal for three months :

January (1927)	...	Rs. 11,58,000
February (,,)	...	,, 11,02,800
March (,,)	...	,, 9,37,901

The average for the three months thus works out to more than ten lakhs per month. On the other hand the monthly remittances from Chapra to Bengal will not exceed rupees thousand per month. The handful of Bengalis resident here can barely make both ends meet. Moreover, being domiciled here whatever we earn is spent here. * * * * * If, however, a teachership on rupees fifty per month is offered to a Bengali, at once an agitation is set up and the cry is raised : *Bihar for the Beharies.*" (English translation).

Under the caption : "Suction of the wealth of Bengal", the *Ananda Bazar Patrika*, in the year 1927 wrote : "In 1926 in the district of Cuttack alone four lakhs of rupees was remitted through the post office. It is necessary to add here that the Oriyas earn their livelihood in Bengal as cooks, menials, plumbers and chiefly as coolies. Hence the remittances to their homes are necessarily much less than those of the other non-Bengalis. The amount sent per money order, is, however, only a fraction of the actual remittances as much of their savings is carried in their purses when they go home."

Then again it is well-known that the Marwari and the well-to-do up-country people live on wheat-flour, dal, ghee, etc., all of which are imported from outside Bengal by themselves ; the Oriyas alone live on rice. So we may say whatever they spend finds its way back into their own pockets. Hence the Marwari or the Bhatia or the Punjabi, although they make their money and live in Calcutta, seldom add any wealth to Bengal nor is Bengal in any way materially benefited by their being residents of Bengal.²⁶ They might as well have been residents of Kamchkatka or Timbuctoo.

The Marwari who has spread his tentacles far and wide over Bengal is shrewd enough to realise that once the eyes of the Bengali are opened and directed to business, he (the Marwari) will have to lose his ground and be slowly ejected from the coigns of vantage he occupies. On this ground, i.e. from instinct of self-preservation, he will never consent to take in a Bengali youngman as an apprentice to his firm. It is sometimes possible for a youngman to be apprenticed to a European firm and by and by rise to high posts and even be finally taken as a partner but it is next to impossible for a Bengali to be an apprentice to a Marwari or Bhatia firm. Nor is this all. Scores of instances have come to my notice of young Bengalis starting business on a small scale who have been simply crushed out of their existence. The jealous Marwari competitor begins to undersell him till he is financially ruined. Hence it is, however paradoxical it may appear, the Marwari though nominally a resident of Calcutta, is hostile to the best interests of Bengal. In short, these non-Bengali groups or rather colonies, (who aside from their business have no particular roots or attachments to their place of settlement), fattening

²⁶ A correspondent in a local Journal (January 6, 1932) further improves upon it. Thus :

“For it is the general custom with non-Bengalis to have their own grocers, barbers, washermen, menial servants, which means clearly that no Bengali can reap the benefit of a pice from their (non-Bengalis) presence in Bengal. On the other hand the European firms in Bengal maintain chiefly Bengali staffs to run their offices and business.”

on vested interests are a positive menace to the economic progress of the Bengali.

In fairness I am bound to admit that as far as jute and tea are concerned, they enjoy world markets for their products. The profits made by these two industries do not represent the drain of the wealth of Bengal, whereas the huge sum amounting to some one hundred and twenty crores, if not more, represents the financial exhaustion of Bengal. Every rupee earned in Bengal by a non-Bengali is derived from the snatching away of its equivalent amount of bread from the mouths of the unhappy children of the soil.

Whenever a youngman instead of rotting all his life as an ill-paid clerk or school-master is advised to take to business, one is at once confronted with the stereotyped reply : "Oh sir ! where shall I get capital?" Ever since the starting of the Swadeshi movement (1906) scores of youngmen to my knowledge have been furnished with capital by persons of patriotic impulses ; but they have almost invariably come to grief. One must go through a period of apprenticeship and 'devil' under a businessman ; he must begin on a small scale, gather experience and even if he fails in the initial stage, he becomes weatherproof. Failures are the precursors of success. Our average youngman, if he fails at the outset, loses heart and reverts to the beaten track.

The common saying in Bengal is that the only capital the Marwari could command in his early career was लोटा कबल पो हातु (i.e., the brass pot and the blanket and flour and gram meal) and may be a few rupees only. He invaded Bengal in the pre-railway days and walked on foot all the way from the sands of Marwar ; and even now he does the same, only he travels by railway. Whereas our youngman, easy going and victim of the all-besetting sin, indolence, wants his path to be strewn with roses. Carnegie's advice to the youngman is well worth quoting :

"It is the fashion now-a-days to bewail poverty as an evil, to pity the youngman who is not born with a silver spoon in his mouth ; but

I heartily subscribe to President Garfield's doctrine, that 'The richest heritage a young man can be born to is poverty'. I make no idle prediction when I say that it is from that class from whom the good and the great will spring. It is not from the sons of the millionaire or the noble that the world receives its teachers, its martyrs, its inventors, its statesmen, its poets, or even its men of affairs. It is from the cottage of the poor that all these spring. * * * Every one is agreed that it is the first duty of a youngman to so train himself as to be self-supporting". *The Empire of Business*, p. 125 and p. 130.

IX. BOMBAY'S SHARE IN THE ECONOMIC DRAIN. BENGAL THE UNDERDOG.

The annual tribute which Bombay alone exacts from Bengal would amount to between 12 and 15 crores.

It is not easy to arrive at an exact estimate of the piece-goods in the Bengal market which is the product of the large cotton textile industry located in the Bombay Presidency. According to the figures we have been able to compile, it appears that in the Calcutta port zone, no less than 1,252 million yards are imported from other zones against a production of only 134 million yards within the zone itself. The Calcutta port zone in respect of piece-goods is regarded to serve the whole of Bengal, the whole of Assam, the whole of Bihar and also a part of U. P. It is noteworthy that the indigenous mill piece-goods are used far more in the province of Bengal than in any other parts of the Calcutta port zone, the consumption in those areas, specially in Bihar, being very largely met from hand-woven goods. After careful reflection we estimate that no less than 1,000 million yards of Indian piece-goods out of 1,252 millions estimated by Mr. Hardy as having entered the Calcutta zone in 1927-28 were consumed in Bengal alone where, it is to be further remembered, the standard of living is higher than that in the other provinces owing to a larger element of educated persons. This 1,000 million yards consumed in Bengal may be valued at not less than 10 crores of rupees. Such a figure also agrees with the value of *Indian* piece-goods which entered Bengal in 1921, shown in official

report at near about 6 crores of rupees. For, we presume that since 1921 owing to the effect of the gradually progressive Swadeshi movement a larger and larger quantity of foreign piece-goods is being replaced by the output of Indian mills.²⁷

Capital (Dec. 10, 1931) has some very significant remarks :

“So far as the cotton industry is concerned, as the construction of another 150 to 200 mills will exhaust the Indian demand, it is evident that if Bengal is to increase production to a level anywhere near its own consumption, it will have to “get a move on”, or remain forever subordinate to the economic dominance of Bombay within whose boundaries most of the existing cotton mills are located. Bengal is not less advantageously situated than Bombay as a cotton manufacturing centre. The chief hindrances to progress being lack of capital and enterprise. Coal, cotton, labour and demand are available but British enterprise has followed other channels and in this industry the Western Presidency has been permitted, by a clever manipulation of its economic resources and political influence, to establish something in the nature of a monopoly, the final result of which will be to pour into its coffers all but a negligible percentage of the profits obtainable from the protectionist and swadeshi movements. In this respect the position is fairly clear. India normally has in recent years spent, on an average, about 60 crores per annum on imported cotton goods. That trade, for various reasons, is in process of rapid transfer to Indian producers, and all the indications point to most of the new mills required being located in the Bombay presidency. The outcome will be that Bombay will become the principal source of finance and control in relation to other industries, existing or prospective, in all parts of the Indian Empire. The process of economic penetration thus foreshadowed has, in fact, already begun although it is still, of course, in its early stages, and some years will elapse before Calcutta and the British community, in accordance with the Congress programme, having meanwhile been “expropriated”—becomes financially dependent on Bombay to the same

²⁷ Mr. M. P. Gandhi, Secretary, Indian Chamber of Commerce, Calcutta, a competent authority, in his *Indian Cotton Textile Industry* calculates that 15 crores of rupees worth of piece-goods enters Bengal from outside the province. I have, however, taken 10 crores as a moderate and safe figure.

It is but fair to state that the price of raw cotton should be deducted from the value of piece-goods supplied by Bombay, as Bengal does not produce cotton.

extent as, say Jamshedpur. If, however, Bombay extends and consolidates its present grip on the cotton industry, thereby establishing itself as the financial as well as the industrial capital of India, the consummation thus foreshadowed will be only a matter of time, and probably not more than a couple of decades. On this assumption, in the economic sphere, the best that Bengal can hope for under Swaraj is a change of masters".—*Ditcher's Diary*.

How the Bengalis have been exploited by the Bombay mill-owners and their patriotism traded upon by methods which will not bear close criticism will be apparent from the instructive dialogue quoted below between Mahatma Gandhi and a mill-owner :

'You know that there has been Swadeshi agitation before now ?

'Yes, I do, I replied.

'You are also aware that in the days of the Partition we, the mill-owners, fully exploited the Swadeshi movement. When it was at its height, we raised the prices of cloth, and did even worse things.'

'Yes, I have heard something about it, and it has grieved me.'

'I can understand your grief, but I can see no ground for it. We are not conducting our business out of philanthropy. We do it for profit, we have got to satisfy the shareholders. The price of an article is governed by the demand for it. Who can check the law of demand and supply ? The Bengalis should have known, that their agitation was bound to send up the price of Swadeshi cloth by stimulating the demand for it.'

I interrupted : 'The Bengalis like me were trustful in their nature. They believed, in the fulness of their faith, that the mill-owners would not be so utterly selfish and unpatriotic as to betray their country in the hour of its need, and even to go the length, as they did, of fraudulently passing off foreign cloth as Swadeshi.'

I knew your believing nature, he rejoined ; that is why I put you to the trouble of coming to me, so that I might warn you against falling into the same error as these simple-hearted Bengalis."—Gandhi : *Autobiography*, vol. ii, pp. 568-70.

Let me now point out another instance as to how Bengal is being squeezed and her poor peasants exploited so that her sister province may benefit. It can be proved by facts and figures that Bengal has been sacrificed at the altar of over-protection given to the Tatas for the last 8 years in the shape of heavy import duty on all foreign corrugated sheets (steel) except

the British products which enjoy exemption under "Imperial Preference." Owing to the iniquities of present import duty Bengal has, in fact, become the double sufferer. For Bengal being the principal market for corrugated sheets her poor people, specially the suffering peasants of East Bengal, have to bear the brunt of an increased rate of import tariff. Not long ago the galvanized iron sheets used to be sold at Rs. 137/- per ton when the *ad valorem* duty was only Rs. 10/- per ton. Under the hue and cry of the Tatas the duty first rose from Rs. 10/- to Rs. 45/- per ton in 1925-6. Then it came down and remained stationary at Rs. 30/- from 1926-30. In 1931 again it suddenly jumped to Rs. 67/- per ton and in September 1931 on account of the 25 per cent. surcharges the import duty on galvanized iron sheets rose to Rs. 83-12 as. This rise is undoubtedly prohibitive and its effect on the consumers who are mainly the poor peasants of Bengal is simply disastrous. Now the Tatas, taking advantage of the prohibitive import duty, are callously maintaining the high price of Rs. 218/- per ton. The margin of difference is so very great that one feels constrained to demand an explanation from this state-aided industry as to its criminal indifference to improvement and economy. Then again on account of this prohibitive duty the import trade of corrugated sheets, which was mainly in the hands of the Bengali merchants before protection was given to the Tatas, is nearly ruined. Now they are being gradually ousted and the non-Bengali firms are usurping the trade as the Tatas are by no means keen on doing any business with the former. So my contention is conclusively proved that Bengal is being squeezed and crushed for the prosperity of the Bombay people. It is indeed an irony of fate that Bengal as is her wont has made herself a dumping ground for her sister province who comes and thrives here at her expense.

One would have justified the sacrifice which the people of Bengal are forced to make in helping the Tatas if it can be shown that having enjoyed protection and bounty for such a

long time they are able to set their house in order so that they can now stand the onslaughts of foreign competition. It is a well-known maxim of political economy that an infant industry may be given protection *but only for a limited period*. But surely such protection should not be tolerated *in perpetuity* as it encourages inefficiency and ultimately spells ruin on the economic condition of the country itself. This has amply been demonstrated in the case of the Tatas. It is generally held that the British administration is the costliest and most extravagant in the world taking into consideration the poverty of the people. But the Tatas have gone one better. Years ago the late Sir Dorab Tata boasted that his works paid higher remuneration to the imported foreign experts than that given to the Viceroy of India. And for this purpose Bengal has been bled white. My object here is not to discuss in detail the equity or iniquity of the increased import duty but to point the moral that protection and prosperity for Bombay mean a corresponding adversity for Bengal. The more so because the exploitation has become ceaseless and more and more ruinous to the people of Bengal. (Cf. *ante* p. 347).

Then again, take the sugar industry. On the recommendation of the Tariff Board a duty of Rs. 6/- per maund on white sugar imported into India has been levied and the indigenous sugar industry is rapidly expanding within this wall of protection. The sugar mills already in existence are paying dividends varying between 15 to 50 per cent. per annum. About 25 mills are being erected every year in Bihar and the U. P. and it is hoped that the entire capital will be recovered as dividends in a few years' time. As has already been shown, Bengal hitherto used to consume the largest fraction of white sugar imported into India (*vide ante* p. 401) and it naturally follows that the sugar manufacturers of U. P. and Bihar will find a ready market in Bengal. It is extremely unfortunate, however, that practically none of these sugar mills owe their existence to Bengali capital or enterprise. Here again the ineptitude of our people comes into bold relief.

It is well known that the inefficiency of the Managing Agents of the Bombay Mills—"the third generation of incapables"—has passed into a proverb. They too are in no hurry to set their house in order. Now we find the Indian Textile Association have approached Government for imposing a hundred per cent. duty on Cotton Goods imported into India from Japan ; their representations have been referred to the Tariff Board for enquiry and very probably a substantial increment in import duties will be sanctioned by the Government.

It is scarcely necessary to lay stress upon the fact that the Tata Iron Works, the textile industry, the salt industry as also a large proportion of sugar industry owe their existence to the enterprise of the Bombay capitalists. And as the Government in its present financial difficulties is but too glad to seize any opportunity which will enable it to fill its coffer at the expense of Indian tax payers, a policy of protection finds ready support, provided Imperial interests are not jeopardised. On a closer scrutiny it will be evident that a large proportion of this import duty is ultimately borne by the Bengali consumers. It is clear that the growth of a Trust System, which now holds America in the hollow of its hand, is also slowly spreading poison in our body politic. A tyrannous protective tariff as in the case of Bombay Industry has proved abortive so far as the improvement of her industry is concerned. Thus the unqualified and continued protection for the Bombay Industry is now lacerating the poor consumers of Bengal. In a word, owing to the helplessness of our own people, Bengal has made herself the underdog of the sister province of Bombay. In fact, Calcutta is fast becoming an industrial annexe of Bombay (and of Rajputana too).

Bengal has again become the helpless victim of the continuous and systematic drain of its wealth by the Insurance Companies—both Indian and foreign. *Indian* of course is practically synonymous with Bombay—so far as the Insurance Companies are concerned.

In several countries the state has imposed restrictions on

foreign insurance companies so that indigenous institutions may flourish without being hampered by unfair and unhealthy competition. Such restrictive legislation obtains in Mexico, Chili, Brazil, Bulgaria, Portugal, Denmark and several other countries. In recent times Turkey has enacted a law for the well-being of Turkish Insurance Companies. Even the small state adjoining India, *i.e.* Siam, has adopted strict regulations to check the incursions of foreign insurance companies. Self-respect and self-interest demand that Indians should insure with Indian companies.

In India unfortunately both the factors are absent. The latest Insurance Year Book contains the information that we contribute about Rs. 5 crores every year to foreign insurance companies as premium. We place this huge amount of money every year in the hands of persons whose interests are diametrically opposed to ours. Does it stand to reason that you should put your savings in the hands of a person with whom your relationship is in clash and conflict at every moment?

When, however, one looks at the question from the point of view of the *drain of the wealth of Bengal* by Insurance Companies one is simply staggered.

Below is given a list of the flourishing Indian Life Insurance Companies with their assets and activities.

		Total Ins. in force Rs.	New Business Rs.	Total Income Rs.	Total Funds Rs.
Asian	...	1,00,48,310	31,29,750	5,86,469	12,50,112
Bharat	...	5,15,72,387	1,50,18,542	27,73,574	96,91,566
Bombay Mutual		61,91,887	18,59,000	3,68,680	11,53,848
Bombay Life	...	1,58,96,029	42,62,000	7,38,529	21,52,432
Co-op. Assce.	...	31,22,553	4,19,500	1,86,073	7,43,025
East & West	...	28,36,833	10,40,000	1,67,032	2,95,549
Empire	...	9,41,72,753	1,27,00,000	59,59,842	3,28,41,279
General	...	1,69,66,444	60,00,000	9,29,449	20,11,115
H. Co-op.	...	3,00,00,000	1,01,11,000	14,78,000	75,00,000
H. Mutual	...	21,40,457	3,56,250	1,20,170	4,00,962
Indian Life	...	1,60,52,004	9,15,500	8,49,641	53,94,626
I. & Pruden.	...	1,15,54,738	36,19,000	7,06,026	19,05,702

	Total Ins. in force Rs.	New Business Rs.	Total Income Rs.	Total Funds Rs.
India Equit. ...	54,31,752	12,33,500	3,12,276	11,51,004
Lakshmi ...	1,66,18,620	66,27,350	8,25,166	9,32,879
National ...	5,18,05,027	1,00,34,400	31,69,000	1,35,00,000
N. Indian ...	1,25,96,554	23,71,500	8,89,029	29,87,493
Oriental ...	31,67,59,456	5,85,52,201	1,84,43,177	8,73,25,747
Peoples ...	27,57,750	17,38,500	98,477	793
United India ...	1,24,61,679	33,65,500	7,82,901	29,42,961
West India ...	1,00,83,474	22,31,750	6,17,118	18,57,639
Zenith ...	37,14,539	25,46,500	3,12,180	5,66,091

It will thus be seen that of the twenty one companies named above only three may be called purely Bengali concerns. It will however be evident on an inspection of the table that they count for little. The really successful ones hail from outside Bengal ; practically from Bombay. The most flourishing of the Bengali concerns is, I understand, largely patronised by non-Bengalis. The newly started journal, the *Insurance World* very pertinently observes : "It is almost a well known fact that Bengal contributes the largest share in the total new business written in India every year. Almost all Insurance companies transacting business in India look to Bengal as the most fertile soil for planting agencies and branches and many of them get as much as two-thirds of their total new business from this province alone. This is no doubt a tribute to the people of the province with regard to their advanced ideas in grasping the principles of Insurance" (vol. i, No. 3). But at the same time it is a positive proof of lack of business capacity of the Bengalis.

So far as the continuous and systematic impoverishment of Bengal is concerned it does not matter much whether her wealth is drained away to foreign lands or to provinces outside Bengal.

Bengal again has been the first and foremost in realising the importance of insuring lives. Of the five crores of rupees contributed by India to foreign insurance companies the major portion is evidently from the pockets of the Bengalis. The

twenty-one Indian companies mentioned above also suck away several crores as owing to the recent Swadeshi movement foreign Insurance Companies are at a discount. It is thus clear that a voluntary tribute of a few crores a year is paid by Bengal to Bombay as the price of her helplessness and ineptitude in business matters. The total amount of tribute paid this way during the last half-a-century would amount to a huge sum.

I am indebted to Mr. S. C. Ray for the sub-joined table, which shows at a glance the miserable position of Bengal.

PREMIUM INCOME.

			1929.
Bombay Companies	...	...	Rs. 2,54,33,000
Bengal	„	...	„ 65,85,000 ²⁸
Madras	„	...	„ 12,72,000
Punjab	„	...	„ 41,60,000
U. P., Ajmere, Delhi Companies	...	„	11,93,000

LIFE FUNDS.

			1929.
Bombay Companies	...	...	Rs. 14,03,27,000
Bengal	„	...	„ 2,70,22,000 ²⁹
Madras	„	...	„ 46,23,000
Punjab	„	...	„ 1,28,66,000
U. P., Ajmere, Delhi Companies	...	„	24,09,000

It will be seen at a glance that *purely* Bengali companies represent only 35 lakhs in Premium Income and only 1½ crores in Life Funds. In the recent volume of the 'Investor's Review', one finds how the insurance companies live and thrive. A large amount of capital lies in the hands of the Insurance Companies and you find a major proportion of the funds invested

²⁸ Deduct "National" (practically non-Bengali, as it has passed out of Bengali into Gujrati hands) about 30 lakhs—so purely Bengali business comes to 35 lakhs of which one company alone represents 23 lakhs.

²⁹ Of which nearly 1¼ crores represented by "National," therefore pure Bengali concerns represent only 1½ crore.

is generally utilised in England and America, etc., for the development of Railways, Electric Power Companies, Gas Companies, Iron and Steel Companies, Coal concerns and shipping and Telegraphic concerns. There are many nation-building departments in which funds of the insurance companies in Great Britain have thus been invested. They are, therefore, fructifying sources and they are able to build up the industrial resources of the nation and make the country more competent from the industrial and manufacturers' point of view. In the United States 35 per cent. of the funds is invested in railways and 30 per cent. in immovable properties and 9 per cent. only is deposited in Government Securities. The major portion of the premiums and funds of the Bombay Companies as also a considerable portion of the foreign ones are derived from Bengal, which are invested for the development of their *own* indigenous industries. The drain under both the items amounts to 2 to 3 crores at least ; it has thus become a serious handicap to our economic freedom.

The following letter affords ample food for reflection ; the writer, who is unknown to me, has evidently grasped the gloomy outlook :—

INTER-PROVINCIAL DISCRIMINATION.

(To The Editor of *Capital*, Dec. 10, 1931.)

Sir,—In "Ditcher's Diary" for the week ended 3rd December, 1931, the pamphlet issued by Sir P. C. Roy and others under the caption "Swaraj and Economic Bengal" comes in for a fairly lengthy review. In your reasoned criticism, however, one fails to find any suggestion whereby Bengal can save herself from economic ruin. Inter-provincial discrimination is to be avoided if possible, and the very idea leaves no doubt a sour taste in the mouth. But I say again, is there any alternative ?

The chief problem of Bengal is now to provide employment for her unemployed young men. The medical profession, the Bar, the clerical line,—all are awfully congested. The only outlet lies in the direction of the development of industries. With a population of over five crores, Bengal,—which is a hot country,—requires a very large quantity of cotton piecegoods to clothe herself, she also consumes a huge quantity of salt. She should try to start at least 40 or 50 cotton mills, and a

dozen salt factories, and if she is able to do so, she must grant protection for at least a decade or two, to her nascent industries.

The imposition of a terminal tax, in the circumstances, is not only legitimate but also imperative. Bengal does not want to shut out all competition from the other provinces in India, but what she wants is to allow her own industries a reasonable opportunity to save themselves from being overwhelmed by outside attacks on the very threshold of their careers. If Bombay complains, she ought to be reminded about the shameless way in which she exploited Bengal at the time of the war. She put up the prices of her cotton piecegoods by 200 per cent. and paid huge dividends to her shareholders. Bengali women unable to purchase clothes committed suicide to hide their shame. Recently a duty was imposed on salt imported into Bengal, to benefit Bombay and Aden, in the teeth of a spirited opposition.

Bengalees, whatever their faults, are an intensely patriotic people, and to them is to be traced, in a great measure, the prosperity of the cotton industry in India and in Bombay in particular; but has Bombay reciprocated? Bengalees are swadeshi to the core, and if they say "we shall grant preference to our own products first" then none, and least of all the British who are proposing 100 per cent. tariff in their own country, have any cause to complain that the remedies proposed are Chauvinistic.

Yours faithfully,
NRIPENDRA K. GUPTA.

It is thus evident that unhappy Bengal lies vanquished, bleeding and prostrate at the feet of her non-Bengali economic conquerors; and alas! no efforts are made even to stanch the wound or stop the hæmorrhage!

X. INDEPENDENT AND AUTHORITATIVE OPINIONS.

I would now give some notes and observations of persons qualified to speak with authority on this subject, who have independently come to similar conclusions.

An eminent counsel and ex-pupil of mine, who has an extensive practice in the original side, High Court, and who has thought much about the failure of the Bengalis in business writes me as follows on his own initiative:—

I hope you will not mind my writing at length to you; I feel a gnawing pain in my heart, when I find that the Bengalis, with better brains than their rivals, are being badly beaten everywhere.

I have examined and cross-examined dozens of Marwari businessmen, I have intimate knowledge of their capacities and limitations, as their legal adviser. My very definite opinion is that the Bengali even in his present decayed condition is far more intelligent than these people. I have often tried to analyse and find out the secret of Marwari success, and their grip over Bengal. They have no education, no technical knowledge, and suffer from most tyrannical and narrow-minded social customs and laws. Why do they then succeed? My own belief is that, as between themselves, they show an amount of trust and co-operation, which is incredible to the outsider; and which I do not find in Bengalis.

Thousands of rupees, even lacs, pass from hand to hand without any document, even a receipt. Packets of jewellery, uncut diamonds and pearls, pass from broker to broker and underbroker and no receipt is taken.

Secondly, they do not allow their energies to be frittered away merely in search of sensation and excitement. I do not know what can be done. In my own way I tried to start a dairy for training young *bhadralogs*. I and four friends raised the sum of Rs. 35,000/-. To cut a long story short, the amount of dishonesty, and disinclination for work, was appalling. The whole money, Rs. 35,000/-, was lost, and we had to find another Rs. 5,000/- to clear off debts.

In another venture I lost Rs. 5,000/-, and the same story was repeated. I undertook those ventures for no gain and in fact if the ventures had been successful, I would have made no profit, as I had bargained that they would have my money for five years, and then gradually repay, without interest. I know it is all very well to offer these criticisms—but I cannot find an answer to the question, “What can be done?”

You have devoted your life to the work, whereas I am leading a life of luxury. You are in a much better position to judge of these matters. If we could improve agriculture and trade, political power will come of itself—but all our energy is being wasted over reforms and Ministers and votes. Those worthless matters have acquired importance which is not legitimately due to them.

Probably I am behaving foolishly in making a series of statements of facts which are obvious and on which I have thrown no light—I trust you will excuse my incoherence.

Mr. B. M. Das of the National Tannery and also of the Government Tanning Research Institute, who as a Tannery

expert, is perhaps unrivalled in India, has favoured me with his experienced views on the failure of the Bengalis :—

I have received your letter asking me to give you my impression about the business capacities of Bengalis in comparison with those of non-Bengalis.

You may remember that I joined the concern in which I am still serving about 15 years ago practically fresh from college. I had no previous experience of the business dealings of the traders of the various communities of cosmopolitan Calcutta. I therefore started my work with an open mind without any bias against any community. On the contrary, being a Bengali myself, I had a natural confidence in, and a pardonable preference for, dealing with the traders of my own community.

I, however, discovered soon that in the line of business which I pursued there were very few Bengali traders. Most of the men with whom I had to deal were non-Bengalis. I was not pleased with this state of affairs and wished that there were Bengalis in the trade. So I utilized every opportunity to induce Bengalis to deal with us in our commodity and encouraged such as we found willing, with all facilities. My feeling was that we would be on a safer ground if we dealt with the Bengalis than with the various non-Bengali merchants. But a few transactions with the Bengali merchants soon disillusioned me.

During the last 13 years, I have had dealings with the Punjabi Mahammadans, Khojas, U. P. dealers, Bihari Mahammadans and Bengalis and have formed some estimate, in my way, of their business capacities and trade dealings. This estimate is now my guide in business. I will take only one community to illustrate my point.

Punjabi Mahammadans.—I have found them honest, above-board and straightforward. They trust you and want to be trusted in return. They are very hard-working men of extremely economical habits.

During the last 15 years I have sold to the Punjabi dealers goods worth about a crore of rupees, mostly on credit. The arrangement was that they would pay 60 days after the delivery of the goods. I have found them usually punctual in payment. If for any untoward circumstance they cannot meet the payment on due date they give timely intimation and ask for an extension of the credit. I have never had any occasion to go to court to realise an outstanding bill from a Punjabi Mahammadan merchant.

They never repudiate a contract, even if they have to lose by keeping to its terms. To return goods once sold to them on the pretext of inferior quality is very unusual with them. They would ask for a rebate and we are always satisfied with a reasonable award.

They will seldom accept service. Even the poorest of them would rather hawk merchandise in the streets of Calcutta than serve. Usually they start work at 6 O'clock in the morning and are in harness till 10 P.M. Half an hour in the middle of the day and another half an hour in the evening are their recesses for their spare meal. Stuffing the stomach with excessive food is unknown to them.

Their living is simple and inexpensive. Twenty or thirty of them live in a rented house which they use for sleeping only. They dine wherever they happen to be in course of their daily work. Our schools and colleges do not help their culture. So when a Bengali *Bhadralok* launches in business he is ill-equipped for it and, going in his casual, lazy and improvident way, so makes a mess of things and gets stranded. His mediæval mode of life, his indolent disposition, his fear of strenuous work, his reluctance to face hardship and difficulty, his early wedded life and above all his joint family of which he is a member are the trammels which overpower him. No sooner does a youngman start a small business than his family cries out for help and support from him. The young merchant spends and soon exhausts not only his small capital but also his creditor's money and eventually goes out of business. It is a sad tale but it is true.

To be able to achieve success, business traits must be developed. Youngmen must be hard-working, trustworthy, straightforward, of simple habits of life and free from family obstacles, which at present hang round the necks of most of them like a mill-stone.

A Professor of Economics informs me—"A few years ago I asked a prominent jute merchant of Dacca why the Bengalis were being ousted from the inland trade in Jute; he gave two reasons: (1) Lower standard living of Marwaris. (2) In dealings with his own community, the Marwari was more honest than a Bengali." The same remarks apply, I am afraid, to other trades as well.

Mr. Jogesh Chandra Mukherjee, who according to his own account, started his career as a cook on rupees five per month and is now the managing Agent of the Calcutta Builders' Stores Ltd., has recently contributed a series of articles to a local vernacular journal entitled "The place of the Bengali in the internal trade of Bengal." He draws a doleful picture; I cull a few items from it.

Thirtyfive years ago the trade in *ghee* (clarified butter) and sugar was mainly in the hands of the Bengali; to-day he has been almost

entirely ousted by the Marwari. In the trade in onion and garlic also the Bengali has lost his position. The onion which comes from the Bombay, Madras and Behar provinces is the monopoly of the non-Bengali; the produce of Bengal proper is also being controlled by the non-Bengali. Eight or ten years ago there were fifteen to sixteen depots of the produce in Beliaghata (Calcutta); at present there are barely six or seven depots. Wheat flour is slowly entering into the dietary of the Bengali—at least of the well-to-do classes. This important article of food is under the thumb of the non-Bengali (mainly Marwari). There are hundreds of small mills driven by electric power scattered throughout the lanes and bye-lanes of Calcutta; they are managed by ignorant up-country men, who began their career as menials or coolies. Then there are three large-scale flour mills each of which turns out eight hundred maunds daily; of these only one is owned and managed by a Bengali. The trade in the flour, which is despatched to the different centres of the country, including the districts and sub-divisions, is entirely a non-Bengali affair. Every day several waggon-loads of pulses are imported from Behar and the United Provinces. This business is also a monopoly of the non-Bengali. Then again, there is a big local trade in *dal* (split pulses) in the Ahiritola quarter of the town; this is carried on entirely by the U. P. men. The oil seeds trade is also a non-Bengali monopoly. Mustard oil is an important article of food of the Bengali—ghee being a luxury of the comparatively affluent classes. Of the fifty million inhabitants of the province barely one million can afford the latter. Thirty years ago all the mills for the extraction of oil from mustard and other oil-bearing seeds were owned and managed by the Bengalis. Now they are fast passing into the hands of the non-Bengali. Coconut oil again worth a crore and a quarter enters the port of Calcutta from Cochin, the Andaman islands etc. This business is in the hands of the Gujratis and the Memons of Cutch.

Then again Mr. Mukherji remarks:—

Schools and colleges are not the places to learn trade and business; there one may learn the underlying principles, including political economy and book-keeping, but everywhere in the world, one must begin on an humble scale and go through the rough and tumble of life courting failures if necessary, which are the real precursors of success. But the Bengali is indolent and easy-going, he fights shy of initial difficulties and risks with the result that he has been slowly but surely elbowed out by the plucky and adventurous non-Bengalis.

A kind of mental paralysis seems to have overtaken the Bengali race. Of late years an extensive trade in potato has sprung up; large

quantities are imported from Shillong, Darjeeling and Nainital. But the Bengali is unequal to the task of manipulating any business on a large scale. No wonder that the supply of potato is passing into the hands of the Marwaris and U. P. men. (English translation).

PROBLEM OF UNEMPLOYMENT SO FAR AS IT CONCERNS
THE MIDDLE CLASS BENGALI ONLY.

Mr. Rajshekhar Bose, under whose able management extending over more than a quarter of a century the Bengal Chemical and Pharmaceutical Works has attained its present prosperous condition, has, at my request, summed up his experiences in a memorandum reproduced below :—

THE MIDDLE CLASS BENGALI—OLD AND NEW.

A hundred years ago, the middle class in Bengal consisted almost entirely of the higher castes. The occupation of this class was much less varied than at present and was generally confined to zamindary, land farming, service under zamindars, agriculture and money lending. A large number of Brahmins earned their living as priests or pandits. The Vaidyas practised medicine as a hereditary profession. Only a few were employed in the public services or in some European merchants' office. Trade and industry were practically confined to inferior castes. The *bhadra-lok* had a contempt for the trader and artisan, and his social aloofness kept him in ignorance of the pursuits of his thriving merchant neighbour. The average middle class Bengali of those days was not better off than his present day successor, but he lived a more contented life as his habits were simpler and wants fewer.

When the present system of education was first introduced, the middle class Bengali, aided by his hereditary culture, was the first to take advantage of it. He at once found that the new knowledge not only benefited him intellectually, but opened up new sources of earning. In those early days it was easy for him to secure a decent clerical post even with very scanty educational qualifications. His predecessors had been used to clerical service under the zamindars and the new occupation quite fitted in with the traditions of his class. Some of his more progressive bretheren were fortunate in securing posts in the higher public services, while the boldest of them went a step further and adopted some of the independent learned professions and were successful, there being few competitors.

Thus the new system of education immediately resulted in an increase in the earning capacity of the middle class Bengali. He was.

a pioneer in the field and his services were in demand even in the other provinces. His newly acquired wealth and experience of city life gradually effected a change in his standard of living. His neighbours noticed the change and eagerly sought the new path. Members of the "inferior" castes were soon attracted and leaving their hereditary vocations, swelled the ranks of service or snug berth seekers. At the present time, whoever learns a little English and adopts the manners of the *bhadra-lok*, is regarded as a member of the middle class.

It will be seen that the middle class Bengali of to-day has a much wider choice of occupations than his predecessors. Yet he has an inherent predilection for particular classes of occupations only. The average *bhadra-lok* considers it beneath his position to adopt a calling in which his learning, however slight, is not indispensable. He will eagerly accept a clerkship however poorly paid, or patiently await his chance in a congested bar; but he cannot bear the idea of being a grocer or contractor of labour or dealer of second-hand wares. He has a supreme contempt for the calling of the uneducated but thriving up-country merchant, but he has not the least objection to serve the latter in the capacity of a clerk. When hard pressed, he may break convention and adopt some 'unlearned' profession; but even then he is careful to select one which is comparatively new and not traditionally associated with the "inferior" castes. He can thus be a motor car driver or watch repairer or even a mechanic but never a tailor, carpenter or smith.

There are of course exceptions, but what has been said above is true of the average middle class Bengali. This class is fast growing by influx of members from the lower social strata and the struggle to realise a steadily increasing standard of gentility is becoming keen. The mentality of the class favours only a limited number of occupations, which cannot provide employment for all. In the old days, it was quite normal for the earning member of a joint family to support a large number of idle relatives. But with the rise in the standard of living, the earner has become exclusive and less mindful of the needs of his relatives. The result has been a gradual break-down of the joint family system, which again has reacted on the present situation by setting free a large number of members, who finding idleness no longer pays, are compelled to seek employments.

THE CAUSES OF THE PRESENT STATE OF UNEMPLOYMENT.

The principal causes may be grouped thus :

- (i) The inherent predilection of the members for particular classes of occupation, viz., (a) the learned professions, (b) occupations for which the chief qualification required is ordinary school or college education, (c) callings not traditionally associated with the "inferior" castes.

- (ii) Inadequate facilities for learning new vocations; want of new careers.
- (iii) Ignorance of mercantile pursuits due to aloofness from trades people.
- (iv) The breakdown of the joint family system which has turned a large number of idlers into seekers of jobs on miserable pay.
- (v) The growth of the middle class by absorption of members from the lower strata, who have adopted the manners as well as the narrow outlook of the *bhadra-lok*.
- (vi) Competition with foreigners and people of other provinces who are better fitted by their character and habits of life for a business career than the Bengalis.

REMEDIAL MEASURES.

It has been repeatedly suggested that the University or the Government can solve the difficulty by introducing vocational education on a wide scale. There is already a fairer provision for teaching the learned professions. The Bengali has had a surfeit of legal training but there is still room for extending the teaching of medicine and engineering. These subjects however are suitable only for the highly educated fraction of the community. For members of middling qualification, there are several schools for teaching book-keeping, stenography and other clerical work. There are also a few institutions for teaching agriculture, mechanical engineering, surveying, drawing, motor car driving and repairing, telegraph signalling, weaving, tanning and other technical subjects. Such institutions are doing useful work and attempts should be made to multiply them. It has been proposed to introduce technical training as an adjunct to secondary education, but the subjects usually recommended are remarkable for their lack of variety, being carpentry, elementary mechanics, and at the most, spinning and weaving. Nothing can be said against such a choice, if the object be to add to the general culture by inducing habits of neatness and skilfulness in the student. But to expect that the latter will profit by his training by adopting the career of a common artisan is to belie the definition of the *bhadra-lok*. It has also been suggested that the University should open technological classes for imparting scientific training in the modern industries. Unfortunately, the demand for men with such training is still small in this country as there are so few manufacturing industries. It is idle to say that the student after finishing his course should be able to start an industry on his own initiative. It is not class-training that can build up a business. A few enterprising and resourceful individuals may attain success, but in the majority of instances the raw young

technologist would be likely to court failure by launching into business without adequate backing.

What then should be done? Let there be by all means a wider provision for training youngmen to crafts and industries if only in anticipation of suitable openings in the future. But let not the rising generation be deluded into the belief that technical education alone shall bring about salvation, just as their predecessors believed that ordinary school or college education is the surest way to earn a living. The youngmen should realise that although it is good to know how to produce a commodity, it is very often more profitable to know how to sell it. It is high time that the middle class Bengali should direct his attention to the doings of the vast army of immigrants from the up-country, who with no other asset than an inherited trading instinct and plenty of dash, are pushing their way into the remotest corners of Bengal and earning a substantial living by capturing the internal trade.

The *bhadra-lok* should be cured of his hankering after the learned professions and clerical services. He should be initiated into the mysteries of trade in its various phases. Once he gets over his awe and repugnance for an unknown career, it should be easy for him to find a place for himself in the diversified paths through which commodities pass from the producer to the consumer. He may be a retailer or contractor of goods or services, an organizer and employer of craftsmen or an intermediary between the merchant and retailer. He may commence as a small trader and satisfy his highest ambition by rising to the position of a big merchant. He need not discard a business be it as humble as that of a sweetmeat vendor or grocer. He can turn his education and refinement into account by providing better service for his customers and transforming the pettiest shop into an attractive establishment.

Such a change of outlook cannot be brought about quickly. It will take some time to overcome the prejudices of the middle class and to initiate them into occupations with which they are not familiar. Training classes can impart only an elementary knowledge of a calling, but practical experience can be acquired only by association with men actually engaged in the calling. In the case of the majority of trades, class-training is impracticable. The function of schools and universities should not be over-assessed. The family atmosphere should be so transformed as not to put an exaggerated value on university degrees. Youngmen have now realized that degrees do not help much in after-life, yet they prolong their studies listlessly, to put off the unpleasant day when they will be called upon to choose a livelihood. Let the degrees be reserved for picked scholars only. (*Vide ante* p. 262). The mediocre

youngman, instead of frittering away his energies and his father's money on aimless college education, can derive more benefit by serving as an apprentice to some tradesman for a few years after passing his Matriculation.

As a sequel to the insane craze for degrees the observations of Mr. Bose, who writes from his vast practical experience, are deserving of close attention. Our youngmen simply drift away aimlessly and do not bestow a moment's thought on the suicidal course they pursue. Strictly speaking, their guardians are more to blame in this respect. When our young hopefuls have taken the B.A., or B.Sc. degree they invariably proceed to the M.A., or M.Sc., in order to put off the unpleasant day when they will be called upon to face the stern realities of life, forgetting all the while that the higher they go up the ladder, the more helpless and incapacitated they become when confronted with the world's battlefield.

Hazlitt once wrote an essay on *The Ignorance of the Learned* and declared that "anyone who has passed through the regular gradations of a classical education and is not made a fool by it, may consider himself as having had a very narrow escape. Certainly the man of learning, * * * * starts with a heavy handicap when he comes down into the realm of affairs." Thus the unfortunate degree-holders often find themselves as so many mollicoddled helpless creatures in a strange land.

Nor is this all. I have already said that those alone should seek the portals of the University, who have got the real vocation for it.

The M.Sc. Examination of the Calcutta University is just concluded (August 9, 1932). 21 candidates appeared in Chemistry ; 17 in Physics ; 38 in Pure Mathematics and 35 in Applied Mathematics. In Chemistry 11 left off after sitting for a day or two ; in Physics 10 did the same ; in Pure Mathematics 9 left off ; while in Applied Mathematics 11, including all *regular* students, were frightened off after sitting on the stool for the first, second or third day. In all, some 40 candidates out of 111 made themselves scarce as pointed

out above. It is to be borne in mind that the expenses of maintaining each M.Sc. student in Calcutta cannot be less than Rs. 40/- to Rs. 50/- per month. So each student during the two years of the academic course must have cost his guardian on an average Rs. 1,000/-; in other words, the 40 students must have spent or mis-spent Rs. 40,000/-. But the cash money squandered is the least part of the tragedy. The appalling wastage of the energies of the manhood of the nation is staggering.³⁰

Then again the Bengali is even now found anxious to go to England and the Continent of Europe, specially Germany and also the U. S. A. for the glamour of a foreign degree or diploma (*Vide ante*, p. 310). He mortgages his ancestral property or is not ashamed to sell himself to the highest bidder in the matrimonial market for this purpose. But on his return he invariably finds himself at sea. He is adventurous by fits and starts; he might be prevailed upon to go to British Guiana as an interpreter to the Indian labour corps; he may go to Hongkong as a doctor to the Indian Army or as a medical officer to any sea-going vessel. He, however, soon gets homesick. The Gujrati, the Cutchi, or the Sindhi, on the other hand, *illiterate though he be*, is found as a trader or thriving merchant in Singapore, Hongkong, Kyoto, Yokohama, Honolulu, San Fransisco, Kenya, Egypt and Paris etc.

In conclusion let me repeat once again that the Bengali unfortunately has given too wide a scope to idealism at the expense of practicality. The rapid means of communication has brought him into touch not only with the European but also with the Chinaman, as also with the non-Bengali—the Marwari, the Gujrati, the Bora or Nakhoda, the Parsi, the

³⁰ It is the more deplorable that of the 23 Applied Mathematics candidates who sat for the whole period of the examination, there were *no regular students*, i.e., those who appeared for the first time. Those who do not sit for all the days or who get plucked, often reappear as *casual students* the next year, thus imposing upon their unhappy guardians an additional burden.

Paschima (the Behari or the U. P. man), the Punjabi, the Oriya, the Cutchi, the Sindhi. The ground is being cut from under his feet in every walk of life and activity. His cook, his domestics, his ferryman, his cooli, often his labourer in the field, his shoemaker, his cobbler, his *dhobi*, his barber—all these are recruited from outside his province. The internal trade of his land is slipping out of his hands as also his export and import business. In a word, as far as the bread-earning problem is concerned, the Bengali is hopelessly floundering in the land of his birth. The twenty-two lacs of non-Bengalis earn and for the most part carry away an enormous amount of wealth which may be calculated at the almost fabulous and incredible sum of between 120 and 150 crores a year ; whereas the Bengali has learnt to look upon a University degree as the *summum bonum* of his ambition and the failure to win it is, according to him, tantamount to the *ruin* of his career (ante p. 281). He has been traditionally averse to commercial or industrial pursuits as he looks upon them as something derogatory. No wonder that the market is flooded with starveling degree-holders. No wonder whenever an advertisement appears in the "wanted" column of a newspaper for a post carrying rupees fifty to hundred per month, hundreds of applications come pouring in ; if the post fetches a salary of rupees one hundred and fifty and upwards the number of applicants is legion. It is this heart-rending state of things which has been almost a source of agony to me during the last quarter of a century and more. In fact, the failure of the Bengali in the economic world has been my obsession so to speak. Hence it is that a portion of my energies has been diverted towards the awakening of my countrymen to this weak point in his traits.

The misfortune of Bengal is that she has allowed herself to be all but ousted from her trade and commerce, internal and external. Her intelligentsia, barring a handful of successful lawyers and placemen, are now reduced to a race of ill-paid and ill-fed school-masters and quill-drivers ; while taking advantage of her ineptitude and weakness, the powerful

and enterprising foreign and non-Bengali traders and merchants have captured all her avenues of wealth. Bengal to the foreigner or to the non-Bengali is the land of opportunity ; he reaps here a golden harvest. But the Bengali is knocking about here and there for a morsel of bread.

The failure of the Bengali not only to keep pace with the extension of the export and import trade but also to participate in mercantile transactions has begun to tell disastrously on his moral stamina. A self-made businessman—the architect of his own fortune—has his faculties wonderfully developed. His administrative abilities are called into full play. He resembles more or less an empire-builder. Whereas a lawyer or a clerk or a school-master, however efficient he may be in his own line, is often found to be an *ignoramus* when he has to deal with any matter outside his own province ; off his own element he is as innocent and ignorant as a baby ; moreover his outlook is apt to be narrow and circumscribed. In a word, he cuts a pitiable and sorry figure when he comes out of his own. Of late years in the Imperial Assembly the Bengali has been relegated to a position of non-entity. This is the testimony of impartial observers in the “Stranger’s gallery”. When financial matters come up for discussion the Bengali representatives, be it said to their credit, follow the adage : “Speech is silvern, but silence is golden”, or perhaps they profit by the counsel of the sage Chanakya :

दूरता शोभते मुखः यावत् किञ्चिद्भाषते

(The ignorant man shines well at a distance so long as he holds his tongue).

Naturally a Dalal, a Pursottamdas Thakurdas, a Kalyanji Narayanji, a Walchand Hirachand, or a David Sassoon, or a Birla or a Khaitan being in actual touch with the world of business and the money-market is more favourably situated to give his opinion on the knotty currency problems. The Bengali Professor of Political Economy in our colleges with his knowledge derived only from text-books is more or less theoretical. A

college-bred man is not necessarily in a position to give correct views on the sale of the reverse council bills. Moreover, the successful businessman with a good balance to his credit in his bank stands erect ; can afford to give his opinion courageously, irrespective of the frowns and smiles of the powers that be, a thing often at a discount in a subject race. He is not tempted to play the part of "Mister Facing-both-ways". He need not vary his doctrine to the fashioned hour. A race of clerks and office-seekers and place-hunters on the contrary has always to assume an attitude of servility. He learns to perfection the arts of a sycophant and tale-bearer. His moral stamina naturally suffers deterioration.

Paradoxical as it may seem the more a Bengali shows his aptitude for original work in arts or sciences the more helpless and incapacitated he becomes for earning his livelihood. One fights shy of taking him even as an apprentice as he talks big and suffers from swelled head. He is also reluctant to go through a period of apprenticeship commencing at the lowest rung of the ladder. The average college-bred youth thinks that to be a businessman he must have a secretariat table and an electric *punkha* whirling over his head and a motor car at his office gate. He expects at the very start to have everything made nice and easy for him, with the result that he often ends his career as a miserably paid clerk or as a suicide.

CHAPTER XXVII.

CASTE SYSTEM—ITS BANEFUL EFFECT ON HINDU SOCIETY.

I.—WIDE SOCIAL BARRIERS BETWEEN THE LITERARY AND CULTURED CLASSES ON ONE SIDE AND FARMERS, ARTISANS, AND BUSINESSMEN ON THE OTHER—FRUITFUL SOURCES OF DOMESTIC DISSENSIONS.

Much is said and taken for granted about the influence of heredity. Caste-ridden India would seem also to furnish abundant proof of certain qualities being confined to persons who can claim blue blood in their veins. In modern India since the spread of Western ideas and education, it is the Brahmins of Poona and Madras, the Brahmins, Vaidyas and Kayasthas of Bengal, as also the "Pandits of Kashmir" domiciled in the U. P., who have produced the most prominent figures in the fields of literary, social and political activity. Sir T. Madhava Rao, Ranga Charlu, Justice Muthu Swami Iyer, Bhasyam Iyengar, Ramanujam, the great mathematician, Ram Mohan Ray, Iswar Chandra Vidyasagar, Bankim Chandra Chatterjee, Michael Madhusudan Datta, Justice Dwarka Nath Mitra, Keshub Chandra Sen, Surendra Nath Banerjee, Vivekananda, Rabindra Nath Tagore, and a host of others fully bear this out. The disadvantages and drawbacks of the caste-system appear here in their naked deformity. In Bengal out of a population of 50 millions, Brahmins, Vaidyas and Kayasthas number about $2\frac{1}{2}$ millions ; in other words, the intelligentsia are practically confined to or rather recruited from only 5 per cent of the population. In England on the other hand, a Churchill risen from the ranks, as hero of Blenheim, is promoted to a Dukedom, a Pitt becomes an Earl of Chatham ; in the literary world we find the son of a butcher blossoming into the immortal author of

Robinson Crusoe, a tinker in jail writes the *Pilgrim's Progress*.¹ France also furnishes similar examples. The mother of William, Duke of Normandy, afterwards William the Conqueror, was a tanner's daughter. The father of the great Pasteur was also a tanner. Napoleon's boast was fully justified, namely that every private carried the Field-Marshal's baton in his knapsack. William Carey, the great missionary, was a cobbler and Josef Stalin, one of the makers of modern Russia, in his early days "cobbed shoes to pay expenses".

There seems to be a world of difference between the small farmers, weavers, barbers, shoe-makers, cobblers in Western countries and their counterparts in our country. Even towards the end of the 18th century and up to the middle of the 19th when no State organisation existed for making primary and

¹ Buckle gives a list of men who rose from the ranks during the Civil War; we can make room for only a few brief extracts:

"As the Reformation was aided, not by men in high ecclesiastical offices, not by great cardinals or wealthy bishops, but by men filling the lowest and the most subordinate posts, just so was the English rebellion a movement from below, an uprising from the foundations, or as some will have it, the dregs of society. The few persons of high rank who adhered to the popular cause were quickly discarded, and the ease and rapidity with which they fell off was a clear indication of the turn that things were taking. Directly the army was freed from its noble leaders, and supplied with officers drawn from the lower classes, the fortune of war changed, the royalists were everywhere defeated. * * * * The tailor and the drayman were, in that age, strong enough to direct the course of public affairs, and to win for themselves a conspicuous position in the state. * * * * The three principal and most distinguished members (of the fifth-monarchy) were Venner, Tuffnel and Okey. Venner, who was the leader, was a wine-cooper; Tuffnel, who was second in command, was a carpenter; and Okey, though he became a colonel, had filled the menial office of stoker in an Islington brewery.

Nor are these to be regarded as exceptional cases. In that period, promotion depended solely on merit; and if a man had ability he was sure to rise, no matter what his birth or former avocations might have been * * * * Skippon, a common soldier who had received no education, was appointed commander of the London militia; he was raised to the office of sergeant-major-general of the army; he was declared commander-in-chief in Ireland, and he became one of the fourteen members of Cromwell's Council".—*Hist. of Civil. in England*.

secondary education available to the masses, remarkable men had been known to spring up from among the ranks in Europe. Hargreaves and Arkwright, Telford, Robert Burns, Hugh Miller, and several others had to earn their livelihood by hard labour, and yet by dint of their own efforts they rose to eminence, each in his own sphere. Our weavers have always been proverbial for their crass ignorance and stupidity.² The father of Andrew Carnegie was a weaver in pre-machinery days and yet we find education and culture of a sort prevailing in his family. Such examples can also be cited from the continent of Europe. Mussolini's father was a blacksmith and his mother a teacher in a primary school. Masaryk's father was a coachman and he himself while a lad of thirteen as a blacksmith's apprentice, was busily engaged in working the bellows ; and yet out of such parentage distinguished sons are born.

Take again the case of James Keir Hardie, the "creator" of the Labour Party : "He went down the pit shaft, a little lad of eight, to win his bread. He never had a day's schooling. His mother taught him to read, but he was seventeen before he could write his name. He taught himself shorthand, practising the characters on the face of the coal seam where he worked. He read Carlyle and Stuart Mill, and came out of the pit at twenty-three with an idea, a purpose, a vision."—A. G. Gardiner.

"The father of Llyod George was a poor schoolmaster in an elementary school at Manchester but he found himself compelled by the state of his health to abandon the scholastic profession with the long hours in an ill-ventilated building, for the manifest advantage of an out-door life. For that reason he

² The Mussalman weaver or *Jolha* is the proverbial fool of Hindu stories and proverbs (Grierson : *Bihar Peasant Life*, 2nd. ed. p. 69). The Hindu weavers (*Tantis*) are equally the butt of ridicule as following blindly whatever their elected leader (*Chani*) dictates. In marked contrast with caste-afflicted India, weavers in England have achieved triumphs by their inventiveness. We have only to instance a Hargreaves or an Andrew Carnegie, both born weavers.

returned to his native district (in Wales) where he renewed the lease of a small farm * * * *

* * It is one of the cherished traditions of the family that although Wm. George had been compelled to relinquish the rôle of a schoolmaster for that of a small farmer, his studious habits remained unimpaired.

"His passion for reading continued with unabated force, and each day's tasks alternated between manual toil and mental studies."³ He died while Lloyd George was only two years old leaving his widow, and two children unprovided. His maternal uncle who was a bachelor and a shoe-maker of humble means took charge of his widowed sister and her two children. He himself during his spare time while not toiling at the cobbler's bench, was a greedy reader of books.

Burns was the son of a small farmer. "The poet" says Carlyle, "was fortunate in his father, a man of thoughtful intense character, as the best of our peasants are. But poverty sunk the whole family even below the reach of our cheap school system and Burns remained a hard-worked plough-boy." Through a series of migrations from one unfortunate farm to another, the poet remained in the same condition of straitened circumstances. At the age of thirteen he thrashed the corn with his own hands, at fifteen he was the principal labourer. Sent to school, he became, for his scant leisure, a voracious reader—eating at meal-times with a spoon in one hand and a book in the other,—and carrying a few small volumes in his pocket to study in spare moments in the fields.

Michael Faraday was also the son of a blacksmith, and in his early days he had to toil as a bookbinder's boy and often subsist on starvation diet.

The poet James Hogg, "the Ettrick shephard" had his education conducted very irregularly owing to his being frequently taken from school to help his father in tending sheep.

³ *David Lloyd George* by J. H. Edwards vol. i, p. 13.

Mention has already been made of the fact that Thomas Carlyle himself was the son of a farmer, who with his children worked hard on an "unfortunate" farm to extract what sustenance he could. The careers of several other eminent men born in humble circumstances have been given elsewhere (*Vide ante*, pp. 280-87).

In the United States any one born in the backwoods in a log cabin can aspire one day to be the occupier of the White House. President Wilson in his *New Freedom* very justly points out in what the greatness of the United States of America lies :

"When I look back on the processes of history, when I survey the genesis of America, I see this written over every page ; that the nations are renewed from the bottom, not from the top ; that the genius which springs up from ranks of the unknown men is the genius which renews the youth and energy of the people. Everything I know about history, every bit of experience and observation that has contributed to my thought, has confirmed me in the conviction that the real wisdom of human life is compounded out of the experiences of ordinary men. The unity and vitality, the fruitage of life does not come from the top to the bottom ; it comes like the natural growth of a great tree, from the soil, up through the trunk into the branches to the foliage and the fruit. The great struggling unknown masses of the men who are at the base of everything are the dynamic force that is lifting the levels of society. A nation is as great, and only as great, as her rank and file" (pp. 77-78).

One salient and instructive feature in all these examples is that no social stigma attaches to the ploughman, the quarryman, the barber or the shephard. To earn one's bread by honest toil is considered honourable, whereas in our country the dignity of labour is almost unknown. One who claims to be a *bhadralog* would rather starve than do manual labour and would be contented to earn a bare pittance by "clerking". Often he prefers to live a parasitic existence by being a burden upon his relatives.

Our *chamars* (shoemakers) and *jolas* and *tantis* (weavers),

and barbers on the other hand ply from generations the same trade unrelieved by any diversions, which lend charm to life. Some of our craftsmen again belong to the untouchable classes and the hereditary stereotyped calling which they follow with its dull monotonous drudgery deprives them of any opportunity for improving their lot. Whereas outside Hindu India, *any* man is at liberty to adopt *any* trade without social degradation attached to it and choose a wife from any layer of the society ; and inspite of persistent struggle with poverty he can triumph over the formidable handicaps of adverse circumstances.

Tibet and Burma are conterminous with Bengal—the one in the north and the other in the east. Both these countries owe their civilization to Bengal through Buddhism. They know nothing of the caste-system and their women enjoy a degree of liberty, which is the envy of even their American sisters. Then again, China which lies further east is equally indebted to Bengal in no small degree for her philosophy and culture also through the introduction of Buddhism. European and American writers are unanimous in declaring that untouchability has been unknown in this land for three thousand years and that she is the least caste-ridden country in the world. Sons of parents of humble origin have often been mandarins in the past. With us, once born a *chamar*, he must forever remain a *chamar* and his children and children's children must not hope to rise in the social scale. Their free thinking capacity has been thus sterilised.

The ploughman or the shephard or the labourer in the mines often buds forth into a poet or a geologist. The environment amidst which he is brought up coupled with heredity fosters the growth of such qualities ; whereas our ploughman, or shephard or *chamar* is born under such adverse conditions that there is no future for him. He almost finds the inscription in Dante's *Inferno* writ large on the door of his mud hovel : "All ye who enter here abandon hope." There is no one to lift him out of the quagmire into which he is sunk. The following extract from a biography of Robert Burns will show what

an immense gulf exists between the British peasant and his home life and that of his counterpart in India. It is also necessary to bear in mind that the delineation refers to the state of things in the middle of the eighteenth century :

“The education of Burns was not over when the school-doors were shut. The peasantry of Scotland turn their cottages into schools ; and when a father takes his arm-chair by the evening fire, he seldom neglects to communicate to his children whatever knowledge he possesses himself. Nor is this knowledge very limited ; it extends, generally, to the history of Europe, and to the literature of the island ; but more particularly to the divinity, the poetry, and what may be called the traditional history of Scotland. An intelligent peasant is intimate with all those skirmishes, sieges, combats, and quarrels, domestic or national, of which public writers take no account. Genealogies of the chief families are quite familiar to him. He has by heart, too, whole volumes of songs and ballads ; nay, long poems sometimes abide in his recollection ; nor will he think his knowledge much, unless he knows a little about the lives and actions of the men who have done most honour to Scotland. In addition to what he has on his memory, we may mention what he has on the shelf. A common husbandman is frequently master of a little library : history, divinity, and poetry, but most so the latter, compose his collection. Milton and Young are favourites ; the flowery *Meditations of Harvey*, the religious romance of the *Pilgrim's Progress*, are seldom absent ; while of Scottish books, Ramsay, Thomson, Fergusson, and now Burns, together with songs and ballad-books innumerable, are all huddled together, soiled with smoke, and frail and tattered by frequent use.”

Evidently intermingling of superior and comparatively indifferent types of blood renders the improvement of species more possible. Unfortunately the Indian system based as it is on the hierarchy of caste makes eugenic progress as also intellectual advance amongst the so-called depressed classes considerably difficult. The defect of this is visible in the lamentable

history of the progress of the Indian nation or indeed of any conservative country.

In the early days of British rule in India the higher castes—the literary classes—were the first in the field to pick up English education. With the consolidation of British power, law-courts with elaborately codified regulations were established—literally sown broadcast; the bureaucratic machinery was set in motion and educational institutions also began to spring up. There was thus a constant demand for lawyers, school-masters, secretariat clerks and doctors. Colleges affiliated to the Indian Universities began to shoot forth mushroom-like and became crowded as a diploma or a degree granted by them came to be regarded as a passport for professional or clerical careers. For a time matters went on smoothly and merrily. A few lawyers or doctors commanded lucrative practices. A small percentage of judgeships of the High Courts and Zilla (district) Courts were also gradually thrown open to the Indians and subordinate executive and judicial services were manned entirely by the latter as Europeans on the same scale of pay were found of inferior calibre and proved to be utter failures. The intelligentsia thus found ample scope not only for the exercise of their subtle brain but also for earning their livelihood.

A silent and insidious poison was however all the time corroding the social system. It is said that the incipient stage of tuberculosis eludes detection even by experienced physicians. The insane craze which overtook the literary classes in the pursuit of the will-o'-the-wisp has now begun to recoil upon them with terrible effect. They find to their dismay that the professions are extremely overcrowded. Trade and commerce have already passed into other hands and their inevitable fate seems to be to swell the ranks of the unemployed.

In India, owing to the reluctance and almost innate repugnance of the higher castes to participate in commercial pursuits, the march of progress has been arrested all along the line. Two thousand years ago, Æsop, with his acute vision and foresight, drew the picture of the body politic in which the members

were in revolt against one another. In the Hindu Society we have non-co-operation with a vengeance. In Bengal fifty-five per cent. of her population, though in blood, race, and speech practically homogeneous, have sought asylum under the hospitable fold of Islam. Then again the *Gandhabaniks*, the *Suvarnabaniks*, the *Sahas*, the *Tilis*, who are the hereditary traders, would have been lost to Hinduism had it not been for the advent of Chaitanya. The Prophet of Nadia preached the message of equality and brotherhood of man and did his best to efface the distinction of caste.

These classes preferred to remain within the pale of Hinduism—though occupying a lower status—and eagerly embraced *Vaishnavism*. Hindu India offers a strange spectacle. A handful of men representing the head or the brain ; but the great bulk of the people who constitute the main trunk and the limbs separated, I had almost said cut off, form the former.

Bengal specially has suffered terribly for this gross stupidity. The thinking portion of Bengal in whom patriotism and political consciousness have been roused now finds itself isolated from the rich trading and moneyed community. Whenever any appeal is made for funds for national purposes, it almost invariably falls on deaf ears and meets with little or no response. Even the well-to-do communities like the *Sahas*, *Tilis* and *Banias*, not to speak of the numerous “untouchables”, *e.g.*, the *Namasudras* and the *Pods*, have become so to speak, the atrophied organs of our body politic and even if electric shocks are imparted to them they show very feeble signs of vitality.

I have often in my public utterances given expression to this unfortunate aspect of the water-tight compartments of Hindu India. It has been pointed to me by correspondents in newspaper columns that some members of the *Tili*, *Saha*, *Suvarna Vanik*, *Sat Chasis* and even *Namasudra* communities have added lustre to modern Bengal ; but they forget that they unwillingly bear out my case. There are a few families in Bengal belonging to the *Tili* community who have been here-

ditary zemindars and merchants for centuries past and who have managed to combine education and culture among them. Thus the houses of Dighapatia, Kashimbazar, Bhagyakul, Ranaghat, etc. (Tili) have produced men who are on a par with any similar sections of the so-called high caste families. Kristodas Pal, again (a Tili), though born of humble parents, rose to the foremost position. The Sahas also can claim to their credit similar instances. The Jagannath College (Dacca) the Murarichand College (Sylhet) and the Rajendra College (Faridpur) owe their existence to the public spirit and munificence of the *Saha* community. Some members of the *Suvarna Banik* community of Calcutta, whose ancestors as banias of the old East India Company acquired wealth, have also produced a few highly educated men.

If, however, one were to consult the Census Report of Bengal, ample justification will be found for my contention. The cases mentioned above are only exceptions. The depressing effect of the caste system discussed above are discernible everywhere in Hindu India.⁴

The difference between the Bengal of to-day and the Republics of Europe in the 14th, 15th, 16th and 17th centuries as also China will now be better understood and realised. In this respect we are centuries behind. Our social hierarchy is diseased and rotten to the core and the canker is eating into its vitals.

Japan shook off her slumbers by one mighty effort when she of her own accord discarded for ever the artificial distinction between the so-called high and low castes. We are never tired of citing the example of Japan when we want to prove that political progress can be achieved even in an Asiatic country. But it suits our convenience to forget all that the land of the

⁴ Cf. "In the third century this exclusive spirit was to have its consequences. Roman society was to expire from exhaustion, a hidden cause was to sap its life. When a considerable class in a state, holds aloof and ceases to labour in the common interest, that state is near its end."—Renan's *Marcus Aurelius*.

Rising Sun has done for her social regeneration. There, up till the seventies of the last century, the *Samurai* clans had monopolised all the privileges now arrogated by our Brahminical castes. The *eta* and the *hinin* (the *untouchables* of Japan) were regarded so impure and unclean that they were not even allowed to dwell in the ordinary villages but had locations assigned to them—a state of things now met with in some parts in the Southern Presidency. But on the memorable day of 12th October, 1871, the *Samurai*, with a spirit of chivalry no less than patriotism, voluntarily parted with their vested interests and abolished the artificial and invidious caste distinction and thus laid the foundations of a compact and homogeneous nation. What was possible in Japan in 1871 has been found to be impossible in India, even towards the beginning of the 4th decade of the 20th century. (*Vide* my Presidential Address before the 31st Indian National Social Conference, Dec. 30, 1917).

Japan also realised that it will not do to hold commercial pursuits in low contempt. What marvellous progress has been achieved in this direction in the course of half-a-century need not be told here. Suffice it to say that to-day Japanese merchant shipping of total tonnage of 4 million is now proudly ploughing the oceans. Japanese goods—the products of her own factories and looms—are now flooding the Indian market and some of the cotton mills of Bombay, unable to face the keen competition of the Land of the Rising Sun, are now threatened with extinction, although the Japanese annually buy the raw material (cotton) from India to the extent of twenty-nine crores of rupees.⁵

⁵ The trading class in old Japan was confined to the lowest grade in society whereas when modern "Japan began to reorganize her civilization she found that her merchant and industrial classes were incapable of the great tasks before them. They could not provide the capital necessary for the new forms of production and for the material equipment which the country required; they were without experience in large-scale enterprise, in Western commercial methods and in foreign trade; they were accustomed to a position of subservience, and could not be expected to assume the initiative. From the first, then, the State was

India has to pay dearly for her folly. Apart from the fact that the caste-system has been the means of keeping talent confined to a microscopic minority of the population, it has always been a fruitful source of internal dissension and fratricidal strife. In a word, more than anything else it has been a chief stumbling block in the growth of Indian nationality. It has also worked incalculable mischief in a thousand and one ways. In Japan before her awakening, trade, commerce and industries, in the primitive fashion in which they existed, were confined to the lower castes. A Samurai also disdained to mix on a footing of equality with those who were engaged in the sordid pursuit of money-making by taking part in business. But while Japan, by the waving of a magician's wand, has almost obliterated the social inequalities, and changed her mentality, India has remained immovable and heedless, with consequences disastrous to herself.

II. PROHIBITION OF SEA VOYAGE—ITS REPERCUSSION ON HINDU INDIA.

MARITIME ACTIVITY—ECONOMIC PROSPERITY AND AWAKENING OF POLITICAL CONSCIOUSNESS.

In the history of the world it is found that maritime activity with its concomitant commercial pursuits, is not only the fruitful source of wealth and prosperity but also of political consciousness. Ancient Phœnicia and Carthage may be cited as instances. The Republics of Venice and Florence in the middle ages tell the same tale. The harbours of these cities laden with merchandise to and from distant marts were the

obliged to take the lead; while the new commercial classes, the bankers, the merchants and the manufacturers, were drawn, not from the traders of the old regime, *but mainly from the ranks of the Samurai*, whose former occupation and privileges had been swept away".—Allen : *op. cit.*, p. 101.

pride of their citizens and the envy of the contemporary nations.

“My ventures are not in one bottom trusted,
Nor to one place ; nor is my whole estate
Upon the fortune of this present year”

—*The Merchant of Venice*.

Again :

“He hath an argosy bound to Tripolis, another to the Indies ; I understand moreover upon the Rialto, he hath a third at Mexico, a fourth for England,—and another venture he hath squandered abroad”—*Ibid*.

The Rialto again buzzed with life. Florence under the Medici was in all her glory⁶. There were gathered the artists, poets and diplomatists and warriors of immortal fame.

Let us as well take the case of the Batavian Republic. A tiny little country, a considerable portion of which was protected from the onrush of the waves of the sea by means of dykes, hurled defiance at the mightiest Empire of the day with its inexhaustible resources of men and money. This was simply because one of her main sources of strength lay in her navy and in her merchantmen. Antwerp, Ostend, Liege, Brussels were thriving cities and their inhabitants were as rich as they were patriotic and heroic. Holland also was almost the first to accept Lutheran doctrines.

⁶ Cf. “It is not easy to realise what Venice must have looked like with this teeming life along her quays and streets, when the pulse of the commercial world beat fullest at Rialto; but there stand forth to assure us of its splendour, the enthusiastic descriptions of Frate Faber, Pietro Casola, above all, of Francesco Petrarch, who bursts into panegyric : ‘From my windows on the river * * * * I see vessels as my house with masts taller than its towers. They sail to all parts of the world, and brave a thousand dangers. They carry wine to England, honey to the Scythians; saffron, oil, linen to Assyria, Armenia, Persia and Arabia; wood to Egypt and Greece; then return laden with merchandise to be distributed all over Europe. Where the sea ends, their sailors quit the ships and travel on to trade with India and China. They cross the Caucasus and the Ganges and reach the Eastern ocean’.”
—*The Venetian Republic*.

In the reign of Charles I, it was the wealthy merchants of London who were the chief supporters of the Parliamentary army ; it was they who supplied the sinews of war, and the majority of them also belonged to the Puritanic faith. The strength of the Royalists, on the other hand, lay chiefly in the aristocracy and country squires. Cromwell could plant the flag of the Commonwealth on the soil of England because of the signal and never-failing supply in men and money, which he could draw upon from the metropolis and the city of Bristol⁷ It will thus be seen that enlightened and advanced views on the governance of a country, as also political consciousness, go hand in hand with maritime and mercantile activity. Those countries which have depended only on agricultural pursuits have also been the fertile soil for despotism and foreign yoke. Their inhabitants have, in general, been wedded to obsolete and superstitious notions, and their vision and outlook have been narrow. Buckle in his *History of Civilisation* has drawn pointed attention to this aspect :—

“If, again, we compare agriculturists with manufacturers, we shall see the operation of the same principle. To the cultivators of land, one of the most important circumstances is the weather, which, if it turn out unfavourable, may at once defeat all their calculations. But science not having yet succeeded in discovering the laws of rain, men are at present unable to foretell it for any considerable period ; the inhabitant of the country is, therefore, driven to believe that it is the result of supernatural agency, and we still see the extraordinary spectacle of prayers offered up in our churches for dry weather or for wet weather ; a superstition which to future ages will

⁷ Cf. “London, true during fifty eventful years to the cause of civil freedom and of the reformed religion * * *” Macaulay : *Hist. of Eng.*

“They (Puritans) were strongest among the mercantile classes in the towns”—*Ibid.*

“The wealthy London merchants, almost all of them Puritans * * *”—Carlyle : *Cromwell* i, p. 52.

Again : “London city, the purse-bearer of the cause”.—*Ibid.*, i, 312.

appear as childish as the feelings of pious awe with which our fathers regarded the presence of a comet, or the approach of an eclipse. * * * There can be no doubt that this is one of the causes of those superstitious feelings by which the inhabitants of the country are unfavourably contrasted with those of the town. But the manufacturer and indeed, nearly every one engaged in the business of cities, has employments, the success of which being regulated by his own abilities have no connexion with those unexplained events that perplex the imagination of the cultivators of the earth”.

The history of modern China is a repetition of the same story. While northern China which mainly depends on agriculture is wedded to agelong tradition and imperialism and has been a stumbling block in the path of nationalism, southern China, on the other hand, has been the first to accept the principles of Sun-Yat-Sen and national consciousness has been awakened in her. The reason is that the Cantonese (*i.e.*, the Southerners) have been in the forefront in trade and commerce. They have been thus brought into touch with the progressive nations and their outlook and vision have been widened.⁸

⁸ Cf. “In the Straits Settlements, the Dutch East Indies and the Philippines the Chinese are not merely numerous and powerful, but it has been largely from funds they have provided that the nationalist movement got its start and has replenished its war-chest in times of prosperity and adversity alike. The great Chinese mercantile communities of Malaysia are Cantonese in blood and more nearly unanimously nationalist in sentiment than any other group of Chinese outside their own country.” Upton Close : *The Revolt of Asia*, p. 202.

Again : “The South earlier came into contact with the outside world of culture through commerce. * * * The South developed traders, sailors, navigators, and a commercial life that brought them into contact with many foreign peoples and regions.

* * * * *

“From the South also come the first generation of students who broke the iron-bound traditions and went to the countries of the barbarians to learn. *Long familiar with the arts and sciences of the West, as practised by the sailor, the trader, or the missionary, the southerner was more inquisitive concerning the sources of differences between himself and the foreigner* (the Italics are mine).” Monroe : *China : A Nation in Evolution*, pp. 158-59.

Bengal or for the matter of that Hindu India in a moment of supreme folly hugged to herself the caste-system in all its rigidity and forbade sea-voyage. Thus cut off from contact with the external world, she became a veritable *Kupamanduka* (the frog-in-the-well), began to look upon the people outside the pale of Hinduism as *melechchhas* (barbarians). She wilfully chose to be blindfolded so that she might rush headlong into the abyss of degradation and ruin and forever be the happy hunting ground of foreign invaders. Verily has she

By too severe a fate
 Fallen, Fallen, Fallen, Fallen,
 Fallen from her high estate.

III—FUSION OF RACES BEING IMPOSSIBLE, THE WEALTH PRODUCING COLONY IN CALCUTTA LIVING APART—
 EXCLUSIVENESS OF THE OPULENT COMMUNITIES, QUITE UNCONCERNED FOR THE
 WELFARE OF THE COUNTRY.

The Lombards migrating to England carried with them their knowledge of banking and the name of Lombard street in the city of London still reminds one of the flourishing colony settled there.⁹ The persecutions of Alva drove the Flemish who introduced improved methods of woollen trade to this lucky island. The Huguenots similarly have contributed their quota to the making of England. When France, due to her blind bigotry, revoked the Edict of Nantes more than 400,000 of her inhabitants, all Huguenots, left her shores and sought asylum in the neighbouring protestant countries, "endowing the nations which received them with their heroism, their courage and their ability". Needless to say these persecuted, in the course of a generation or two, became fused with the people of their adopted land. Thus we find that the two great gifted brothers, John Henry and Cardinal Newman, were born of a family of Dutch

⁹ In England, at least, the enterprising traders and bankers who found their way to the west from the 13th to the 16th centuries, though they did not all come from Lombardy, bore the name of Lombards.

extraction and probably of Hebrew origin. Their mother was of a Huguenot family.

Herbert Spencer always attributed his non-conformity and vehement spirit of opposition to the existing religious creeds to Huguenot blood (in a diluted form) derived from his mother.

Of the great German scientist Helmholtz we read that his mother was a descendant of William Penn. In his veins was German, English, and French blood. Bentinck, the boon companion of William of Orange, "was sprung from a noble Batavian race and destined to be the founder of one of the great patrician houses of England". The French novelist Alexandre Dumas had a strain of Negro-blood in his veins. Ludwig Mond—A German by birth and education—makes his fortune in England and settles down there and with his English partner John Brunner founds a great alkali manufacturing concern. He richly endows the Davy-Faraday Laboratory as also that of his *alma mater*, the Heidelberg University. His son Alfred Mond (the late Lord Melchett) perhaps the best known businessman in the world, and certainly in Britain, becomes an out-and-out patriotic Englishman. The patriotic Chinese statesman Eugene Chen claims the blood of three distinct races—Chinese, British and African. It is unnecessary to multiply instances.

England kept her doors wide open to those who were forced to seek shelter in her bosom and she has been richly recompensed for her liberal policy. For instance, she received with open arms many Jews in her fold. This assimilation has undoubtedly been conducive to the growth of her body politic. Such eminent Jews as Benjamin Disraeli (Lord Beaconsfield), George Joachim Goschen, Edwin Montague, Samuel Herbert and Rufus Isaacs (Lord Reading) have been so absorbed in their land of adoption that they completely identified themselves with her interests rendering her signal services as eminent statesmen. There being no impediment in the shape of obnoxious caste-system, the above foreign elements were in the course of one or two generations merged into the bulk

of the English people by intermarriages.¹⁰ In Bengal on the other hand the rich, non-Bengali mercantile communities live by themselves without any touch with the indigenous people. The wealthy Marwaris and Gujratis (Bhatias), though as Hindus they bathe in the Holy Ganges and worship at the temple of the Goddess Kali and hold in veneration the sacred cow, are none the less separated from the Bengalis by the interposition of a Chinese wall.

My contention is that the caste-system is to a large extent responsible for the misfortune of Bengal as narrated here. Had there been intermarriage between the Marwaris and Bengalis a breed of men would have been produced, who would have inherited the characteristic qualities of both the races. A Birla marrying a Mukherji's daughter would have begot a young Birla inheriting the business instinct of the one as also the intellectual prowess of the other. A Goenka's daughter wedded

¹⁰ Cf. "For upwards of a century after the conquest, Anglo-Norman and Anglo-Saxon had kept aloof from each other; the one in haughty scorn, the other in sullen abhorrence. They were two peoples, though living in the same land. It is not until the thirteenth century, the period of the reigns of John and his son and grandson, that we can perceive the existence of any feeling of common patriotism among them. But in studying the history of these reigns, we read of the old dissensions no longer. The Saxon no more appears in Civil War against the Norman; the Norman no longer scorns the language of the Saxon, or refuses to bear together with him the name of Englishman. No part of the community think themselves foreigners to another part. They feel that they are all one people, and they have learned to unite their efforts for the common purpose of protecting the rights and promoting the welfare of all".—Creasy: *The Fifteen Decisive Battles of the World*.

Again: "The great grandsons of those who had fought under William and the great grandsons of those who had fought under Harold began to draw near to each other in friendship; and the first pledge of their reconciliation was the Great Charter, won by their united exertions, and framed for their common benefit".—Macaulay—*Hist. of Eng.*

"Early in the fourteenth century the amalgamation of the races was all but complete; and it was soon made manifest, by signs not to be mistaken, that a people inferior to none existing in the world formed by the mixture of three branches of the great Teutonic family with each other, and with the aboriginal Briton".—*Ibid.*

to a Bose's son would have begot a Bose in whom the traits of both the races would have been harmoniously blended. The dictum of Sir Henry Maine, the eminent Jurist, that caste is the most disastrous and blighting of human institutions, is by no means over-coloured. Not to speak of matrimonial alliances, even inter-dining is forbidden. Nay even among the Marwaris themselves there are certain sub-sects, *e.g.*, the Maheswari, the Agarwala, the Oswal, amongst whom intermarriage is not allowed. The result is that the Bengali and the Marwari are practically as the poles asunder. An average Bengali knows as little of the inner social life and customs of the Marwari as he does perhaps of the Laplander and *vice versa*. The same remarks apply to the opulent Jain community.¹¹

Thus Bengal to her economic disadvantage cannot count the Marwari, the Jain, and the up-country Kshetri, who have for generations settled here and cultivated to perfection only one art—that of money-making—as her own. The Bania instinct is innate in the latter, but education and culture are sadly wanting in them, hence they are not only clannish but often victims of rank superstition. While they will grudge you a few rupees for a good cause, they will easily allow themselves to be victimised and duped by a *Babaji* in *gerua* (red ochre) cloth and spend thousands at his behest for performing pujas and consult him as a sooth-sayer when they stake large sums in gambling. I have firsthand knowledge of the huge funds wasted in this manner. The average Bengali Saha or Tili is not behindhand in this respect. He sometimes even goes the Marwari one better.

An ex-pupil of mine, a Sir T. N. Palit Research Scholar, joined the non-co-operation movement, took a vow of celibacy and dedicated himself to the service of the country. He has founded an Asram (retreat) in East Bengal and opened several schools for the education and uplift of the depressed classes. There are several wealthy traders belonging to the Saha caste resident there ; one day he called upon one of these and im-

¹¹ It should be noted that some Marwaris also belong to Jain faith.

plored him to contribute something to his school ; but he turned a deaf ear to the piteous appeal. A *babaji* with a flowing beard appeared on the scene. At once this man went down on his knees, prostrated himself before the holy mendicant and begged the privilege of serving him and his numerous *chelas* (disciples). The man with his blood-shot eyes flared up and imperiously demanded first of all one seer of ganja (*i.e.*, 2 lbs. of the Indian hemp, *Cannabis Indica*) worth 80 rupees. This being readily supplied he was propitiated. Then followed a list of articles of foodstuffs including ghee (clarified butter) and wheat flour for feeding his non-descript followers, who are often idlers and for whom Satan finds ample mischief. In other words, this trader had no hesitation in spending some five hundred rupees then and there for what he simply believed to be an act of piety, while at the same time he grudged rupees five as a donation to an elementary school by which members of his own backward community are primarily to be benefited.¹²

I shall give another instance. At Nagpur (C. P.) the Vice-Chancellor of the University with his utmost efforts was able to raise barely rupees eighty-thousand for the new buildings by private subscription, while within a distance of a mile or so a wealthy Marwari has erected a temple of white Macrana marble brought all the way from Jaipur—the same marble with which

¹² As I am looking through the proofs I learn that a wealthy Tili tradesman has just celebrated the nuptials of his nephew with great *clat*. He sent cart-loads of presents in an aeroplane and chartered two special trains with 1st class carriages for carrying his guests to a distant district. Thus while gladly squandering several thousands of rupees only for a vain show, he would, perhaps, grudge even a few hundred rupees for a girls' school of his own backward community. It is very likely that the vast fortune, he now squanders, was earned by his father by hard labour and perhaps by carrying big loads on his own shoulders from a distance. He in his lifetime never cared to ride a motor car while his son hires an aeroplane to send presents on the occasion of his nephew's marriage ceremony!

the Victoria Memorial of Calcutta has been built.¹³ This temple has cost him some six lakhs of rupees, while over and above that he has richly endowed a *dharmasala* (rest house) attached to it. Another wealthy Marwari of Calcutta has built a temple at Pushkar (Ajmere), one of the famous holy places of the Hindus, at a cost of some twelve lakhs of rupees. Here, and in similar sanctuaries, orthodox superstitious priests and ganja-smoking mendicants alone flourish. Society derives very little of real good from such benefactions. But why single out the Marwari alone? The Cutch Memon or Nakhoda Mahomedans are wealthy merchants of Calcutta, but they are as a rule without culture or education and their outlook is much the same as that of the average Marwari. They would spend lakhs on the building or restoration of a mosque but will not spend anything on education or hospitals. A recent example will suffice :

“Through the generosity of the Cutch Memon or Nakhoda Mahomedan community the biggest Mosque in Bengal in Zakaria Street is under construction at a cost of 15 lakhs of rupees. It is the only one of its kind in India. The building is four-storied and will represent a feast of architectural beauty. To the top of the main dome the height will be 117 feet and the two minars will stand 151 feet each while they will be supported by 25 minarets of varying heights. The work is being supervised by Mr. M. S. Comar, the designer”—*The Illustrated Weekly Hindu* (July 27, 1930).

Madras is fortunate in this respect. The Chetti community, many of whom are wealthy money-lenders and bankers are, after all, *Madrasis* and thus they belong to Madras. The money which they earn remains in Madras. Unfortunately, their outlook, also, is equally narrow. An Annamali Chettiar,

¹³ Central Province is much more in the grip of the Marwaris than even Bengal. Raipur, Bilaspur, Durg in fact the region known as Chhatisgarh (lit. the area of thirty-six forts) are now strongholds of Marwari commercial activity.

is rather an exception than a rule. These Chettis lavishly spend, out of their abundance, for repairing temples and decorating the idols with costly gems and jewels.¹⁴

Then again during the annual bathing ceremony at Ganga Sagar (near the mouths of the Ganges) thousands of pilgrims resort there for purification and wealthy Marwaris are known to find passage-money for scores of *babajis* and mendicants so that they thereby may earn what they believe to be salvation and piety. There are rich Jains again at Azimgunj (Murshidabad) and other places where they have settled for the last three hundred years; they go on annual pilgrimages to Mount Abu and Palitana (Gujrat); some of them often spend as much as Rs. 25,000 on such occasions. Their notions are much the same as those of the crusaders of Middle Ages in Europe. The few cases I have cited are by no means exceptional, but are typical and only point the moral and adorn the tale.

But why blame the Marwaris and Jains alone? Even college-educated Bengalis who claim to be leaders of thought are loath to shake off the trammels of priestcraft and hug to their bosom most absurd and superstitious customs. They are found to be as much victims of rank superstition as any of their illiterate brethren, often the dupes of *sadhus*. Witness the Satyagraha going on at Munshiganj. There the lawyers, (some of them M.A., B.L.'s) are persisting in denying admission to the so-called lower castes to the temple."¹⁵

¹⁴ "A glaring example of which profusion I will cite once more the case of twenty lakhs of rupees which was being spent in my old district when I was out there nine years ago on the repairs of one temple at Ramnad".—J. B. Pennington, *India*, Jan. 13, 1919.

¹⁵ In a passage of surpassing pathos and beauty the Historian of Civilization thus accounts for the downfall of Spain: "A people who regard the past with too wistful an eye, will never bestir themselves to help the onward progress; they will hardly believe that progress is possible. To them, antiquity is synonymous with wisdom, and every improvement is a dangerous innovation. In this state, Spain still lingers. Hence the Spaniards are remarkable for an inertness, a want

Andrew Carnegie gives away millions for founding working men's institutes not only in the land of his birth but also in the land of his adoption. He also founds Research Institutes in America and richly endows the Scottish Universities. Rockefeller also spends millions of dollars for the same purpose. He has also spent untold millions for the uplift of the Chinese and for combating tropical diseases. If one were to take at random an issue of the weekly edition of the *London Times* and glance at the wills and bequests by self-made men for public good he will find that their charities are seldom misplaced or misdirected. Year after year in this manner rich gifts and endowments go to swell the funds of the existing educational institutions and hospitals or are set apart for founding new universities or institutions for combating tuberculosis or cancer or tropical diseases.¹⁵

of buoyancy, and an absence of hope, which, in our busy and enterprising age, isolate them from the rest of the civilized world. Believing that little can be done, they are in no hurry to do it. Believing, that the knowledge they have inherited, is far greater than any they can obtain, they wish to preserve their intellectual possessions whole and unimpaired; inasmuch as the least alteration in them might lessen their value * * * While the human intellect has been making the most prodigious and unheard-of strides, * * * Spain sleeps on, untroubled, unheeding, impassive, receiving no impressions from the rest of the world, and making no impressions upon it. There she lies at the further extremity of the continent, a huge and torpid mass, the sole representative now remaining of the feelings and knowledge of the Middle Ages. And, what is the worst symptom of all, she is satisfied with her own condition. Though she is the most backward country in Europe, she believes herself to be the foremost. She is proud of everything of which she should be ashamed".

These remarks apply with far greater force to unhappy India. Spain at any rate is not caste or untouchability-ridden, nor is there any bar to marriage between one Spaniard and another or between a Spaniard and an Englishman or a Frenchman.

¹⁶ Mr. Samuel Courtauld, a member of the famous firm of artificial silk manufacturers, has added a sum of £20,000 to the £40,000 which he gave to erect and equip a new institute at Middlesex Hospital.

Sir William Morris, the motor car manufacturer, has announced that he intends to devote to charity the whole of the £2,000,000 which he draws this year as accrued dividend on the profits of the firm.

Barnado's Homes, Homes for consumptives, New Parks to serve as lungs for congested areas, improvements in agriculture including the securing by cross-fertilisation and natural selection of the best strain of wheat and breeds of cattle—in a word, a thousand and one objects for the welfare of the country come in for a good share of the attention of the philanthropic donors. Owing to the intellectual backwardness and the consequent narrowness of vision and want of culture, temples presided over by dissolute priests and also swarms of idlers in the garb of *sadhus* and *babajis* alone thrive here.

The only community in India, though small in numerical strength, not amounting to even a lakh, which has been foremost in commercial and industrial enterprises, which has been prolific in producing men of education and culture as well as patriots and philanthropists is that of the Parsis of Bombay in whom one finds culture, wide outlook and philanthropy in harmonious blending. They are also comparable in this respect to the English and American philanthropists. Thus apart from J. N. Tata, the Camas, Jejeebhoy, the Wadias and several other families are proverbial for munificent charities.¹⁷

The Gujratis are not a whit behind the Parsis in enterprise and public spirit. A Vithaldas Thakersey or a Gokuldas Tejpal is by no means an exception ; whilst a Pursottamdas Thakurdas who combines in himself sound business instinct and a unique knowledge of economics, sheds lustre on his province and the community of which he is an ornament. It must be admitted that man for man a Gujrati is superior to the Marwari in width of outlook and in patriotic fervour.

Lady Houston has made an unconditional gift of £100,000 to St. Thomas' Hospital, London.

A recent telegram announces (Nov. 1931) that nearly the whole of the late Sir Thomas Lipton's fortune, which it is anticipated by his trustees, will exceed £1,000,000, is to be divided among hospitals and charitable institutions in and near Glasgow and in London and Middlesex.

¹⁷ The late Sir Dorab Tata by his will has recently bequeathed his whole fortune of between two to three crores for charitable purposes.

The Marwari has yet to learn to subordinate his selfish interests to public good. His pursuit of wealth is only from sordid motives. No wonder that in Bombay the Gujrati saying : **तने माड़ोवारी बने गया**—"You have become a Marwari"—is regarded as a reproach.

Another serious misfortune of Bengal has also to be taken note of. The Marwaris and the Bhatias who have settled here for generations scarcely look upon Bengal as their real home. They have snatched away the trade and business of the Bengalis and have grown immensely rich ; but the land of their adoption scarcely derives any benefit from their huge earnings. Most of the multimillionaires of Calcutta hail from Bikanir and they naturally carry their wealth to their native place. The Britisher so long as he resides in Bengal contributes at any rate something to her in the shape of the wages of the *baburchi* (cook) Khansama and ayah he engages and the price of the fowls, eggs, and fish he consumes. But the Marwari in this respect contributes not a farthing. He imports his own food-stuffs, *e.g.* wheat, ghee and pulses, etc. from up-country. His servants again are all up-countrymen and being a vegetarian he does not pay for the fowl or the fish or the egg. The donations to and the endowments of, the Calcutta University come up to about 66 lakhs but scarcely any respectable amount has as yet been contributed by a Marwari ; his outlook is much the same as that of his Nagpur counterpart referred to above.¹⁸

¹⁸ That the contribution of the Marwari is only an insignificant fraction thereof, is evident from the statistics given below :—

"Kesoram Poddar (Ashutosh Mookherjee Medal Fund) Rs. 10,000/-; Birla Hindi Lectureship Fund Rs. 26,200/-; Ganapati Rao Khemka (George V. Coronation Medal Fund) Rs. 1,000/-; Total Rs. 37,200.

Had the Marwari been imbued with the patriotic impulses of the citizens of Bombay, the local institutions (besides the University) like the Carmichael Medical College, Chittaranjan Jatia Ayurbignan Parisad (National Medical School), the Deaf and Dumb School, the Asylum for the Blind &c., should have been recipients of crores of rupees out of their abundance. *Unto whom much is given of him much is expected.*

On the other hand an Andrew Carnegie spends millions for the

The Marwari, as I said above, will grudge to spend anything like a decent sum for the educational institutions of Bengal or the Central Provinces. The land where he makes his fortune is seldom or never a beneficiary of his charities but on the other hand a Hindu of education and culture, also not a native of the place, realised the debt, I had almost said the debt of honour, to the place where he reaped his harvest of gold, and bequeaths almost his entire property to the local university. I need only allude to the princely benefaction of the late Rao Bahadur D. Lakshinarayan, a businessman of Kāmptee who has recently (November, 1930) bequeathed rupees thirty lakhs to the Nagpur University for industrial Education.

Perhaps I owe an apology to the great Marwari community of Calcutta. It will be seen that I have no complaint against the Marwari as such. He is by no means stingy and close-fisted; he opens his purse-strings ungrudgingly whenever a famine or flood overtakes the land. His charities are however often misdirected, due to his want of culture and education and broadmindedness. There are fortunately notable exceptions. A Ghanasyam Das Birla would do credit to any community in India. One of the noblest sons of India, whose patriotism, unbounded charity and unparalleled sacrifice for the country's cause, has secured for him a permanent place in the hearts of the people also belongs to this community—I mean Seth Jamunalal Bazaz. But a hopeful sign of the times is that an era of awakening is slowly (I had almost said at a snail's pace) dawning, especially among the Agarwalla section of the community.¹⁹

benefit of the land of his adoption. "In Pittsburgh I had made my fortune and in the twenty-four millions already spent on this group, she gets back only a small part of what she gave, and to which she is richly entitled".—*Autobiography*, p. 257.

¹⁹ Compare the following two extracts from the speeches of two representatives in the consecutive sessions of the Marwari All-India Agarwalla Mahasava :

"Day in and day out we hear of the heart-rending tales of domestic

Of late, I have come into close contact with same *young Marwaris*; they seem to be made of the right stuff and augur well for the future of the domiciled sons of Marwar, Bikanir, Jodhpur, etc. But at present they do not count.

The above was written a couple of years ago. A case in point illustrates what I have been urging all along:—

“The town of Pilani was astir on the occasion of the visit of His Highness the Maharaja Bahadur of Jaipur, in connection with the opening ceremony of the new Birla College Building on December 6.”

* * * * *

“It was raised to a high school in 1925 and big hostels were built to provide accommodation to students. Raja Baldeodas Birla chalked out a progressive programme of development of the Institution and created a Trust called the Birla Education Trust, with a fund of what now amounts to 12 lakhs of rupees, for the propagation of education. In 1929 the school was raised to an intermediate College with commerce classes added to it in 1930.”—*Liberty*, Dec. 8, 1931.

Thus while the benefaction to the Calcutta University is only the paltry sum of rupees twenty-six thousand, that spent

unhappiness which is a direct and inevitable consequence of a marriage system which is absolutely ill-suited to the times; snatched away from her natural surroundings of play and learning and wedded to another equally young and innocent boy, and a little later we learn that the life of the boy-husband is cut off at the very threshold of his youth, thus leaving before the girl-widow the only prospect of paying the penalty of an early marriage by physical and mental tortures. Equally numerous are the cases in which a man almost in the evening of his life drags to the altar of marriage a girl fit to be his great-granddaughter because, forsooth, he cannot live a bachelor's life in his old age. It is for you to imagine the dreadful consequences of such obnoxious matrimonial alliances which are a veritable bane to the community in which they occur”.

Presiding over the Twelfth Session of the All-India Marwari Agarwalla Mahasabha, Mr. D. P. Khaitan, an enlightened and educated member, referred to lack of education, conservatism, ill-matched child marriages and purdah system etc., which stand in the way of progress.

in the native village of the Birlas amounts to the huge figure of twelve lakhs. The Birla Brothers reap no inconsiderable portion of their golden harvest in Bengal, but then Bengal is to them a land of exile.

It should be remembered that as far as culture, wide outlook and patriotism are concerned the Birlas represent altogether a higher type of Marwaris, yet they find it impossible to shake off their inborn clannish and parochial mentality.

IV. REVIVAL OF HINDU ORTHODOXY FATAL TO THE PROGRESS OF INDIA.

Our excellent friends, the Hindu revivalists, will talk by the hour on the transcendental truths and sublime thoughts in the "Gita" and deliver elaborate discourses on the catholicity of Hinduism and its superiority over all other existing creeds ; will condemn untouchability in unmeasured terms and so on. When, however, it comes to carrying the precepts into practice, they are the first to show the white feathers ; as Professor Wadia puts it :—

"Our Vedantist will flood you with quotations to show how catholic Hinduism is, but woe to the man who dared to take this seriously and ever acted upon them. Quotations are for show, not for action. In fact, I believe so much precious time has been wasted in proving that Hinduism is cosmopolitan, is catholic, that no time has been spared for the practice of it. Fear leads to repressions and without its conquest no man can find himself or rise to his full stature".—*Presidential Address at the Philosophical Congress* (Dec. 1930).

No wonder that in spite of the empty vapourings of the Hindu Sabhas and Sangathans, conversion to Islam goes on day by day as merrily as ever. And why should it not? Islam knows no distinction of race, colour, or creed as far as social matters are concerned. Untouchability it is a stranger to ; it is a "perfect equaliser of men", as Carlyle has it. The same philosopher again says somewhere, "A man whose word will not inform you at all what he means or will do, is

not a man you can bargain with. You must get out of that man's way, or put him out of yours." No wonder our friends the *Namasudras* are tired of the hypocritical assertions of the Hindu leaders and are sometimes eager to seek shelter in the bosom of Islam.²⁰

Hinduism with its elaborately designed and graded social hierarchy is full of weak elements ; on the one hand we have a handful of cultivated and highly intelligent men belonging practically to the higher castes and on the other the teeming myriads including the trading classes, non-responsive to the former's call. The huge Hindu society is like an immense expanse of an ocean and the divers sects and sub-sects are so

²⁰ The daily papers of 17-6-31 under the caption "Oppression of High Caste Hindus" published the following item of news :—

"Information reached Dacca that the entire *Namasudra* population of the *Sunamgunj* sub-division in Sylhet are going to be converted into Mahomedanism. Dr. Mohini Mohan Das of the *Namasudra* community telegraphed to *Sunamgunj Bar Library* as well as to the Congress Committee to ascertain the truth of this and he has got a reply to the effect that the facts are correct and it has been further stated that this position has been brought about by the preachings of a Mahomedan Moulavi of Dacca and the oppression of the high caste Hindus".

Islam is even making headway against Christianity which claims to be based upon Fatherhood of God and Brotherhood of man. Its outlook is highly democratic. As a recent writer observes : "Islam by the very fact of its starting as a desert creed—and a desert is a leveller—and by its having at once spread over the three continents, never acquired the sense of racial distinction. To Islam all Moslems are brothers, whether they be Bantus or Berbers, Turks or Persians, Indians or Javanese. And this no theoretical equality, but practical equality to be seen in their social relations and work-a-day behaviour. It is this which appeals to peoples low down in the scale of culture, who feel they are lifted up to the level of their converters when they go over to Islam. It seems to us that in the battle between Islam and Christianity for the spiritual conquest of Africa, the victory will lie with the former, unless the Christian missionaries divest themselves of all racial prejudices and sense of superiority, and set up in real earnest the Christian brotherhood which alone can stand against the Islamic brotherhood".

In the mosque the Amir and the Faquir pray side by side. Hence it is that Islam has spread rapidly throughout the Malayan Peninsula, as also in Java, Borneo, and Sumatra.

many tiny islets scattered about, nay, separated from one another by an unbridgeable gulf. It is not a body pervaded by one principle of vitality and sensation ; in the numerous quarrels between the high castes and the so-called low castes—its fissiparous and disintegrating tendencies are daily brought before our eyes.

Rabindra Nath who has always been unsparing in his denunciations of the silly absurd customs and rites which have got encrusted round the *achalayatan* (the immobile Hindu social frame-work) in the course of his recent message on the celebration of the sixty-third birth-day of Mahatma Gandhi rightly says :—

“The greatest enemy which has been dominating our country is the gigantic monster of unreason and superstition, caste prejudice and religious bigotry—which are more potent in their malignity than any power represented by strangers from across the seas. No counting of votes and scrambling for privileges can give us independence unless these evils are uprooted. This is what we have to remember on the occasion of the birth-day of Mahatma Gandhi who has given us the courage of a new life and of a determined effort for Freedom. While we realise that it is literally a movement which Mahatmaji, with the tremendous force of his moral personality, has started for the whole country—a movement from inertia and self-diffidence towards self-determination—let us hope that such a stirring of the national mind will also help India to move away from all the social impediments that are holding her back from the path of Fulfilment”.

V.—HEREDITY AND ENVIRONMENT—EUGENICS—INFLUENCE OF THESE APPLIED TO MY CASE.

A poor peasant girl tending her father's flock has had a vision. She distinctly hears the Heavenly voice calling her the chosen instrument for the deliverance of Orleans and acquires almost superhuman powers and performs prodigies of valour. The prince of dramatists, “the swan of Avon”,

“fancy’s child”, is born of a parentage which has never shown any poetical genius. There is nothing in the lives of Jesus, Mahomet, Copernicus, Galileo or Newton to justify us in the conclusion that these great men were favoured by heredity.

William Herschel, the greatest observing astronomer, was the son of an oboe player in a military regiment at Hanover. Of his mother we read, “Herself unable to write, she set her face against learning and all the new-fangled notions. The sons and daughters were all very musical. At the age of seventeen he went over to England and earned his bread as an organist and teacher of music. After fourteen hours or so spent in teaching and playing he would retire at night to instruct his mind with a study of mathematics, optics, Italian or Greek. He also about this time fell in with some book on astronomy”. (O. Lodge) * * * “He was deep in optics and astronomy, used to sleep with the books under his pillow, read them during meals and scarcely ever thought of anything else. He was determined to see all the astronomical wonders. Not being satisfied with the Gregorian reflector, which he used, he took to the construction of telescopes on his own account. He converted his bed-room into a workshop and during spare hours began grinding and polishing mirrors.” “That a direct inheritance of musical gifts is essential to the constitution of musical genius is disapproved by the case of Handel whose family was wholly unconnected with the art. Handel’s musical bent in childhood was indeed sternly repressed by his parents, yet he contrived to overcome all the obstacles in his path and by the age of eight or nine was a composer”. Ram Mohan Ray was born and bred in an orthodox Brahmin family at a time when ignorance, superstition and bigotry stalked over the land. When barely passed his teens he writes a treatise on monotheism in Persian with an Arabic preface and for his revolutionary social doctrines is compelled to leave his paternal roof. Such instances can be adduced *ad libitum*. In fact, for every case cited in favour of the hereditary transmission of genius and

talents by the adherents of Galton, Carl Pearson etc., nine cases can easily be cited to prove the contrary.

Not only two brothers born one after the other, but also twins are often found to possess diametrically opposed tendencies and predilections. John Milton, the great poet is an out and out supporter of Cromwell and his regicide colleagues ; while his younger brother Christopher in the time of the Civil War was a Royalist and in his old age not only had a leaning towards Popery, but had no scruples in accepting a judgeship under James II on the express understanding that he would support the dispensing power.²¹

I have been led to indulge in the above remarks on eugenics in order to throw light on the psychology of my own tastes and inclinations. Some traits and features in my character can be traced to my parentage but how even in my boyhood I imbibed a business instinct I cannot explain. As I have already said, I was passionately fond of agricultural pursuits. I took particular delight in turning the glebe with the spade, in tilling, sowing and hoeing with my own hands and raising varieties of crops, in enriching the soil and increasing its productivity by applying manures composed of cow-dung, ashes and decomposed leaves. I used to be a close observer of the methods of cultivation in vogue among the farmers. I noted that the ashes of plants used as a manure improved the quality and materially contributed to the growth of *kachu* (*Arum Indica*) and *kala* (*Musa sapientia*) ; of course, I did not then know that the ashes of land plants are very rich in potash. I also raised crops of turmeric and ginger. I could indulge my

²¹ The modern science of eugenics based upon Mendel's law and Weismann's *germ plasm* gives satisfactory explanations of some of these apparently anomalous phenomena ; but it is imperfect.

A recent authority thus sums up : "The part played by heredity is entirely different from the part played by environment in determining of the character of the developing individual. Heredity determines all the possibilities. Environment may foster the development of certain characteristics and retards or even prohibits the development of others, but it produces nothing".

hobby in this direction to my heart's content as my parents fully entered into my designs and used to help me liberally with funds in hiring the services of labourers. An orchard of cocoanut palm and arecanut planted half a century ago by almost my own hands, revives a pleasant memory of my days of boyhood. On our removal to Calcutta I looked forward to the advent of the summer and winter vacations, when I could go home and give full play to my agricultural bent. My inborn commercial and business instinct was also awakened. A small part only of the produce of the fields would be consumed by our household and it was therefore necessary to dispose of the large surplus in the open market especially as the proceeds would go to defray a good portion of the outlay incurred.

From this time forward my shop-keeper's instinct was roused.²² Some of our amiable neighbours were a little scandalised at the son of the laird of the village selling the produce of his field ; but I did not mind it. My commercial instinct, though lying dormant for years, stood me in good stead and came to my rescue a few years later. My father who was more of a theoretical turn of mind once embarked upon a hazardous venture. H. H. Wilson's *Sanskrit English Dictionary* was getting very rare. A copy of it could hardly be procured for Rs. 40 or 50. A learned Pandit persuaded him to publish the third edition ; he (the Pandit) himself undertook to correct the proofs and supervise the publication and held out bright prospects from the sale of the work. The enterprise proved to be a dismal failure and my father lost some seven thousand rupees which added to his pecuniary embarrassments. Two well-known publishers of Sanskrit works of those days—Pandit Jivananda Vidyasagar and Bhuban Mohan Basak of Nimtola Ghat Street were induced to purchase a lot of the dead stock at a nominal upset price of Rs. 2 per

²² I use the word in its comprehensive sense. Napoleon derisively called the English people "a nation of shop-keepers".

copy. Being in actual touch with business they made considerable profit out of the bargain. Several hundred copies still remained undisposed of and I did not allow them to be sold as so much waste-paper but kept them carefully packed hoping for a better future. In the damp climate of Bengal to preserve such material from the ravages of the white-ant and the silver-insect is by no means an easy task. My precaution and labours were, however, destined to be rewarded three or four years later. In 1878 the Calcutta establishment had to be broken up as my father being now involved in debt had to cut down his budget. I had to shift my quarters to rooms in a "barrack" at 80, Mukhtaram Babu's Street. My business instinct now stood me in good stead. Although my father tried his best to send me monthly remittances to meet my expenses, I could well realise his difficulties and was anxious to relieve him as much as I could. I now hit upon the idea of advertising in the papers for the sale of Wilson's Dictionary at Rs. 6 per copy. Orders began to come in from different parts of India as also from some of the Calcutta book-sellers. Not only did I get on fairly well but I was emboldened to start as a book-selling agent. The dictionary was published in the name of Gyanendra (strictly spelt Jnânendra) Chandra Rây and Brothers, so I christened the name of the would-be firm accordingly. As I had no capital I took care to add as a sort of rider to the advertisement for the Dictionary: "Mofussil orders of books attended to." I even went so far as to put up a sign board in bold types: "G. C. Ray & Bros., Publishers and Book-sellers." I almost made up my mind that as soon as my college career was ended I would start as a book-seller on a humble scale and slowly work my way up.²³ Even in those days I had a strong aversion

²³ It may not be out of place to note here that my propensity in the publishing and book-selling line has been gratified through three of my pupils (M.Sc.'s in chemistry) who started on a humble scale and successfully piloted through severe trials the firm of Chuckervetty, Chatterjee & Co., Book-sellers and Publishers.

to Government service. The award of the Gilchrist scholarship upset all my plans. Providence had evidently ordained that my talents should be given a new orientation and utilised in diverse ways, including the harnessing of science to industries.

CHAPTER XXVIII.

THE ENVOY.

I. MEN I HAVE SEEN AND HEARD.

Although it has never been my ambition to figure as a politician much less to win renown as a platform speaker, yet I seldom let slip an opportunity to hear eminent political leaders, both Indian and foreign. I was present at the Liberal Demonstration (1883) in Willis's rooms in support of Lord Ripon when the Ilbert Bill agitation was at its height. John Bright presided over the meeting and among other speakers were W. E. Forster, Sir George Campbell who was regarded as a bore in Parliament, and Lal Mohan Ghose. Our countryman acquitted himself very creditably considering that he had the misfortune to be preceded by the greatest of England's living orators. I have heard W. E. Gladstone, Joseph Chamberlain, Michael Davitt, John Dillon, Wilfrid Lawson (the "licensed jester of the House of Commons"), Lord Rosebery and A. J. Balfour. I was also present at a public meeting in Edinburgh where the celebrated African explorer, H. M. Stanley, was the principal speaker. In 1926 when I visited Dublin as a guest of the University (*Vide ante* p. 204), a garden party was given in honour of the delegates. I met there His Excellency T. M. Healy (Governor-General of the Irish Free State). The ripeness of age had evidently tempered and mellowed the fervour of his youth. His bland smiles and affable and suave manners made one forget that he was the "Tim" Healy—the firebrand, hotspur and obstructionist Parnellite of the early eighties of the last century.

Of the Indian political leaders, Lal Mohan Ghose had a rare gift of eloquence. He was bereft of mannerism which characterised the oratorical outbursts of Surendra Nath. But Surendra Nath was the idol of young Bengal and his emotional

appeal with thundering oratory had a wonderful effect on the sentimentality of our youngmen. His memory was highly retentive. As President of the Indian National Congress held at Poona the address he delivered was a marvellous performance. He spoke for three long hours without pause or hesitation and without ever caring to look at the printed copy in his hand.

Gokhale was no orator but his fluent speech was profuse in facts and figures. Master of statistics he never indulged in sentimental effervescence. In his precise pigeon-holed mind there was no room for hesitation about conclusion because there was no room for doubt of facts. He understood the value of brevity and was always compact as an essay of Bacon. While Surendra Nath made an appeal to the heart, his was an appeal to the intellect. Ananda Mohan Bose, another great founder of Indian Nationalism, was the despair of his reporters—the flow of his words was simply torrential. He was a bit diffuse and verbose. A speech of his is given elsewhere (p. 155). I had also the good fortune to listen to the impressive sermons and addresses of Keshub Chandra Sen, any number of times. He was the type of a “poet-prophet in the pulpit”, and surrendered himself to his emotion and soared with wings. He never argued; he proclaimed thrilling tidings of a new dispensation.

I have just enumerated some of the political leaders and orators. But the historic gathering in connection with the tercentenary of the Edinburgh University naturally comes vivid to my recollection. A reception was given in honour of the many distinguished guests who had responded to the invitation of the College and had come from far and near. Seldom has it been the lot of any person to witness such a brilliant galaxy of men assembled on one and the same platform. The constellation consisted among others of Saffi, one of the triumvirate, who with Mazzini and Armellini was invested with dictatorial powers when the Republic was proclaimed at Rome; Ferdinand Lesseps, the great engineer of the Suez Canal; Louis Pasteur, chemist and father of bacteriology, who gave the final

blow to the theory of spontaneous generation ; Hermann von Helmholtz, the eminent physicist as also physiologist and mathematician ; James Russell Lowell, the American poet and abolitionist ; Robert Browning whom the Lord Rector (Earl of Iddesleigh) humorously introduced as the poet whom no body could understand. Saffi and Helmholtz spoke in faultless English while Lesseps and Pasteur in their mother tongue.

I am writing this portion after a lapse of nearly half-a-century ; I trust my memory is not at fault.

II. CONCLUDING REMARKS.

It is with considerable diffidence and hesitation that I submit these pages to the public eye. A reader who will even cursorily glance through them will have no difficulty in discovering that portions are scrappy and disjointed. Indeed, at one time I seriously thought of rewriting the whole before sending it to the printer. It so happens however that I have never had to lead a busier existence than at the present moment. A thorough and systematic revision would thus have meant putting off the task indefinitely, while the sands are running fast out of the hour-glass of my life. *The better is the enemy of the good* ; and it is on this principle that I have ventured upon the publication of this volume, fully conscious as I am of its numerous faults and imperfections.

Portions of the book were jotted down eight or nine years ago and instalments were added on during my voyages to and from Europe in 1926 ; others again during my frequent and numerous tours throughout Bengal and this vast Peninsula in the course of the last few eventful years. This will account for the somewhat mangled, disconnected and slipshod style of the narrative presented.

Some might, at the very outset, offer the advice that a shoe-maker had better confine himself to his last ; that a chemist had no business to go beyond the range of his laboratory. Fortunately or unfortunately as the case may be,

the subject of this memoir has been something more than a mere chemist.

I am what I am and I cannot help being made up of perhaps incongruous elements. Bernard Shaw is not perhaps far off the truth when he says that "no man can be a pure specialist without being in the strict sense an idiot." Whether the materials presented here are of an incongruous nature strung together or whether they bear some sort of relation to the career of the Bengali Chemist it will be for the reader to judge.

Mine has been a dull, humdrum and routine-regulated school-master's life. I have no sensational tales of adventures to tell ; no thrilling hair-breadth escapes to narrate ; no cabinet secrets to divulge at the close of momentous incidents so that the expectant world would listen to them with pricked ears. I thought, however, that a plain, unvarnished narrative of my uneventful career, which has run its noiseless tenour, might convey some lesson to my countrymen, specially of the younger generation.

All the phases of activity in my life have been briefly touched. After finishing the important portions of the text I laid it aside for four or five years and made a fairly exhaustive study of the economic condition of Bengal, lying scattered in the writings of shrewd observers so as to eliminate the personal equation as far as possible and that no one might charge me with being obsessed as regards the failure of the Bengali in the economic world. My considered opinion to my regret is fully corroborated by the many authorities who have bestowed thought upon the subject and I have not hesitated to quote them in the footnotes and sometimes in the body of the text.

I have often said in my addresses to youngmen that I became a chemist almost by mistake ; my predilections being always towards history, biography and general literature. There is nothing uncommon in it ; Huxley has told us that though he earned his name and fame as a zoologist, "philosophy and history having laid hold of him in this eccentric fashion have

never loosened their grip." The monograph on Hume in the *English Men of Letters* series amply bears it out. Lord Haldane, eminent as he was in the field of philosophy, shed lustre on his profession as a lawyer and shone with equal brilliance as a statesman. Such instances can be multiplied.

I confess I am a strange contradiction. Although I am generally credited with being an industrialist, yet from the dawn of my intelligence the ephemeral character of the phenomenal world has haunted me and a disregard for worldly effects has become my second nature. Thus the writer lacks the essentials of a successful industrialist or businessman, as he has always realised the force of the saying—*अर्थमनर्थम् भावय नित्यम्*—that is to say: "love of money is the root of all evil". So the dominant note running through his life is: "Lay not up for yourselves treasures on earth; for where the treasure is, there is the heart also."

Any one who will take the trouble to go through these pages will, I hope, all the same find that there is a connecting link pervading my life-work and that my activities are but parts in a comprehensive piece. In other words, he will probably be convinced that I have not lived an aimless life.

It is unfortunate that in one's own memoir the frequent use of the first person singular cannot be dispensed with; one naturally lays oneself open to the reproach of egotism. An awful burden of responsibility has borne me down whenever I have to use it. Whatever field I have ploughed I have ploughed as an humble instrument in the hand of Providence: my failures are my own: to err is human. But my successes, if any, are to be attributed to the guidance of the All-knowing, who chose me to be His humble instrument. After all, a Divinity shapes our ends. Lord Haldane in the closing words of his *autobiography* gives expression to his consciousness of this aspect in human efforts:—

"I have no sense of success on any very large scale in things achieved. But I have the sense of having worked and of having found happiness in doing so. Better that than more

honours and more wealth, and more esteem from men. For the happiness gained has a character in it of which nothing beyond can take the place. So far as external circumstances are concerned, I would not if I could take the chance of living life over again. A distinguished living statesman and man of the world once asked me whether, even with the aid of such knowledge as experience had brought, I would like to try to begin life anew. My answer was in the negative. 'For', I added, 'we are apt greatly to underrate the part which accident and good luck has really played in the shaping of our careers and in giving us such successes as we have had'. His rejoinder was to the same effect as my answer to his question. 'I would not', he said, 'myself try again, for I do not feel sure that good fortune, irrational as it has been, would attend me in the same way'. The contingent plays a large part even in the best ordered lives, and we do well to ask of philosophy to teach us how to make ourselves detached from the circumstances it brings, whether happy or otherwise. The best that ordinary mortals can hope for is the result which will probably come from sustained work directed by as full reflection as is possible."

J. S. Mill, who is taken to be an agnostic (by some even regarded as an atheist) almost hints his belief in the doctrine of *fatalism* and *predestination* in the following passage :

"Some are born rich without work, others are born to a position in which they can become rich by work ; the great majority are born to hard work and poverty throughout life, numbers to indigence. Next to birth the chief cause of success in life is accident and opportunity. When a person not born to riches succeeds in acquiring them, his own industry and dexterity have generally contributed to the result, but industry and dexterity would not have sufficed unless there had been also a concurrence of occasions and chances which falls to the lot of only a small number Energies and talents are of much more avail for success in life than virtues. . . In the situation of most people no degree whatever of good conduct

can be counted on for raising them in the world without the aid of fortunate accidents”.

All through my varied activities I felt the force of the saying :

तथाह्वयैकेन हृदि स्थितेन

यथा नियुक्तोऽस्मि तथा करोमि ।

I commit myself to Thee, O Lord ! make me Thy agent.

I have ventured to say many things about the shortcomings of the Bengali, with the fond hope that my timely note of warning will not be a cry in the wilderness. The Bengali has got many noble qualities and I am proud of my nationality and I glory in being a Bengali. In one essential aspect, however, he has proved to be a dismal failure, namely in the art of earning his livelihood. The bread problem of the Bengali has been my obsession during the last forty years, and to my dismay I have been watching that in the land of his birth he is least able to stand the keen competition which faces him in every field. As I am writing these lines, I have been touring from village to village in my native district and keeping an eye on the boys and youngmen. Their stunted growth, and pale, anæmic, lacklustre looks bear ample evidence of mal-nutrition. Helplessness is writ large on their countenance. A spirit of defeatism pervades them and they are daily sinking down into a despondent rut. When the manhood of a nation in the prime vigour of life is sunk in despair and struck with mental palsy there can be no hope for the future. And yet, in the evening of my life, I cannot afford to give up hopes.

As an humble educationist all through my life, it has been my painful duty to point out how the craze for university degrees has become an unfortunate source of many fatal drawbacks. The Bengalis are perhaps the worst victims of this craze and the result is, as Bernard Shaw puts it : “A fool’s brain digests philosophy into folly, science into superstition, and art into pedantry. Hence University Education.” It is only too true that “a learned man is an idler who kills

time with study. Beware of his false knowledge : it is more dangerous than ignorance. *Activity is the only road to knowledge.*" Let me echo once more with the great writer : "When a man teaches something he does not know to somebody else who has no aptitude for it, and gives him a certificate of proficiency, the latter has completed the education of a *gentleman*" and thus becomes a failure all his life.

I have not spared any pains to dissect the Bengali character and to lay bare its weak points. Like a surgeon I have plunged the lancet deep into the flesh so as to remove the morbid tissue and apply healing balm. The Bengali people, after all, is my people and its faults are my faults ; and its many redeeming qualities are equally my own. I have thus a moral right to take any liberty I like with it.

History is being recast and remade before our very eyes. Not long ago the Chinaman and the Turk—"the sickman of Europe"—were held up to public ridicule and contempt by the overbearing Occidental and were cited as instances of effete and worn-out races. Under the guidance of Heaven-born leaders these people have at last been roused from their age-long slumber, have shaken off their lethargy and despair ; and have acquired the strength of rejuvenated youth to the amazement of an incredulous world.

There is no reason why the Bengali, or for the matter of that, the Indian, should lag behind and not fulfil his destiny. I almost hear the echoes of the organ voice of the author of *Areopagitica*.

"Methinks I see in my mind a noble and puissant nation, rousing herself like a strong man after sleep, and shaking her invincible locks."

INDEX

INDEX

- Absentee landlords, 16 *et seq.*
 Academy of Sciences, 135.
 Acharyya, Prankrishna, 89, 226.
 Albert Hall, 43; meeting, 127-28.
 Albert School, congenial atmosphere,
 39; influence of Brahmo teachers
 on Ray, 42-44.
 Ali, Mohammed, 230.
 Allen, on Japan, 343, 353.
 America, shipping in, 354-355; co-
 operation in, 416-417; U. S. A.
 Government and unemployment
 in, 379-385; genesis of, 506.
American Chemical Journal, 119.
 Andrews, C. F., on floods, 247-249.
 Arabic literature, enrichment of, 144-
 145.
 Arrhenius, 69, 121, 172, 173.
 Asiatic Society of Bengal, 85, 117,
 152, 158.
- Baker, on China, 316, 323-324.
 Balfour, Lord, 204.
 Banerji, Chandi Charan, 42.
 ,, D. C., 340.
 ,, K. M., 9, 38, 146.
 ,, Moheschandra, 28.
 ,, Prafulla Chandra, 34.
 ,, S. C., 279.
 ,, S. K., 207.
 ,, Surendra Nath, 47, 123, 125,
 Partition and, 139; Ray
 on, 537-538.
- Bangiya Steam Navigation Co., Ltd.*,
 360.
 Bankura under British rule, 412;
 decay of tanks and bunds, 414-
 417; cup of misery of, 419-421.
 Bardhan, Jogendra Chandra, 193.
- Barnard, Sir Charles, 73-74.
 Bayley, Sir Stuart, 77.
 Bengal, partition of, 138-139; intel-
 lectual renaissance in, 140-144, 145-
 151; early economic condition of,
 395 *et seq.*; a creditor country,
 428-432; economic conquest of, 440,
 et seq.; eclipse of, 471-473; annual
 economic drain of, 473-478; the
 underdog, 478-484; effect of caste
 system on, 519-521.
 Bengal Burma Navigation Co., 357.
 Bengal Chemical & Pharmaceutical
 Works, 92-111, 124, 162, 318, 332-
 333.
 Bengal Enamel Works Ltd., 345-347.
 Bengal Relief Committee, the, 239-
 249.
 Bengal trade, non-Bengalis in, 451-
 456; Marwaris and, 445.
Bengali brain and its misuse, 153.
 Bengali literature, poverty on the
 scientific side, 87, modern, 145-
 146.
- Bengali merchant princes, 20-21;
 464-465.
 Bengalis, failure of the 440 *et seq.*
 due to ineptitude, 440-447; due to
 lack of versatility and adaptability,
 447-451; due to lack of industrious
 habits, 456-459; due to want of
 enterprise and initiative, 459-466;
 opinions on, 488-497.
 Bentley, Dr., 237-238.
- Berthelot, M., 114; correspondence
 with Rây, 115-116; encouragement
 from, 117-118; on *History of Hindu
 Chemistry*, 119; Rây with, 135-
 136; Rây on, 136-137; funeral, 137.

- Bessemer, 277, 330.
 Betelnut trade, 447-448.
 Beveridge, quoted, 398.
 Bhaduri, Chandra Bhusan, 83, 95, 96, 102; for the new chemical laboratory of the Presidency College, 113; 182, 317-318.
 Bhaduri, Kulabhusan, 96, 102.
 Bhatnagar, Prof. S. S., 161, on Physical Chemistry, 186-188, 194.
 Bhattacharyya, D. N., 345-346.
 Bhattacharyya, Dwijendra Nath, 345.
 Bhattacharyya, Kali Krishna, 41.
 Biri manufacture and the Bengalis, 459-461.
 Birla, G. D., 279, 527-529.
 Bodhkhana, Ray Chaudhurs of, 2.
 Bombay's share in the economic drain of Bengal, 478-483.
 Bose, Amulya Charan, 77; and Bengal Chemical, 101-103; and indigenous drugs, 104; 108, 109; death, 110.
 Bose, Ananda Mohan, 123, 125; on Educational service, 155-158; Ray on, 538.
 Bose, D. M., 207.
 Bose, Jagadis Chandra, 53, 79, 80, 129, 131; epoch-making researches, 152-153; his achievements, 154; 226; Mrs. Bose, 80.
 Bose, Jogendra Nath, 86.
 „ Panchanan, 250.
 „ Prafulla Kumar, 193.
 „ Raj Narain, 30, 86, 142.
 „ Raj Shekhar, 111; on the failure of the Bengalis, 493-497.
 „ Satyananda, 231.
 „ Satyendra Nath, 167, 196.
 „ Subhas Chandra, 238-239, 241.
 Brahmo Samaj, influence on Ray, 30-31; 39; tenets of, 42; *Brahma-bandhu Sabha*, 85; movement, 146-147.
 Bright, John, and Rây's essay, 64; 266, 537.
 Burke, on "Plassey drain", 232-233.
 Butler, Dr., 176, 177.
 Calcutta, past and present, 20-23; Ray removed to, 26; its changing population, 469-471.
 Calcutta Pottery Works, the, 321, its history, 337-342.
 Calcutta University, the jubilee, 163; 173; College of Science, 196, 197; Fuller affair, 198-199; Government and Science College, 200-206, 207.
 Cambridge University, Ray's visit to, 176-177; Ray at the Congress of the Universities, 204-206.
 Capitalism *cum* Industrialism, 390-391.
 Carey, William, 145, 503.
 Carlyle, on student life at Edinburgh, 57-58; 209; on Cromwell, 222; on true university, 301; quoted, 529-530.
 Carnegie, Andrew, on graduates and business, 272-273, 276, 333-334; his career, 277; advice to youngmen, 477-478; 504, 524.
 Caste-system, its baneful effect on Hindu society, 502 *et seq.*; responsible for the misfortune in Bengal, 519-521; stumbling block in the growth of Indian nationality, 513; inter-marriage and fusion of races impossible, 519.
 Chakravarti, Gopal Chandra, 193.
 Charka, gospel of, 361 *et seq.*; spinning and weaving, their decline, 362-365; and agriculture, 375-376; lament of a spinner, 377-378.
 Chatterji, Aditya Kumar, 42.
 Chemical manufacture and modern industry, 327-329.

- Chemical Research in Bengal, 160-161, 166-167, 168, 169-173, 182-183, 191-195.
- Chemical Service Committee, Ray's note of dissent, 319.
- China, porcelain manufactory, 319-321; Baker on, 323-324; machinery and unemployment in, 385-386; modern, 516.
- Chinese, carpenters, 456-457; in the shoe-trade of Calcutta, 458-459.
- Chowdhury, Prof. Niren, 242.
- Clairvoyance and Ray, 76-77.
- Clerkdom and failure of the Bengalis, 466-469; merchant's clerk, 467, 469.
- Cloth trade of Dacca, and the Bengalis, 440-441.
- Cohen, 132.
- Colebrooke, 361; on charka, 362; on early sugar industry in Bengal, 400; quoted, 412.
- Coleridge, his bitter experience, 210.
- College graduates in business, 333-336.
- Collège de France*, 135.
- Congress of the Universities of the Empire at London, Ray delegate to, 173; 174-176; at Cambridge, 204-206.
- Cordier, M. Palmyer, 136.
- Croft, Sir Alfred, 74, 75, 77, 80-81, 112, 154.
- Crookes, 1, 172.
- Crum Brown, Prof., 59, 60, 68, 73, 131, 132, 195.
- Cumming, Sir John, 111.
- Cunningham, the young Irish professor, 161-163.
- Curzon, Lord, and the partition of Bengal, 138-139; on parliamentary eloquence, 269.
- Dan, Mahendra Nath, 42.
- Darjeeling, Ray at, 77, 169.
- Das, B. M., on the failure of the Bengalis, 489-491.
- Das, C. R., 231-233, 241; Ray's letter to Mrs. Das, 232-233.
- Das, S. R., 53.
- Das, Satyaranjan, 53.
- Das Gupta, J. M., 241.
- Das Gupta, Kshitit, 250, 253-254.
- Das Gupta, Satis, 241, 250, 253.
- Datta, Akshay Kumar, 30, 146.
- „ Dr. B. B., 207.
- „ Madhusudan, 1, 143-144.
- „ P. N., 71.
- „ Rashik Lal, 167, 182, 185.
- „ Srinath, 39.
- Davy-Faraday Research Laboratory, Ray worked at, 131.
- Deb, Giris Chandra, 29.
- Deb, S., 338-340.
- Deodhar, G. K., 123.
- Deoghar, Ray at, 86-87.
- Dewar, Sir James, 131-132.
- Dey, Biman Behari, 171, 179.
- „ Kanailal, 105.
- „ Maniklal, 167, 182.
- „ Rajendra Lal, 182, 193.
- „ Tincory, 174.
- Dhar, Nil Ratan, 167, 171; and physical chemistry, 173-174; 182, 185.
- Dittmar, Prof., 69.
- Dixon, 132.
- Dobbin, Leonard, 60.
- Durham University, and Ray, 120.
- East India Company, 4, 78; and Bengal marine, 349, 413; and Investments from Bengal, 430-431.
- Eden Hostel, Ray and the brilliant group of students at, 167.
- Edinburgh, 56-58; life at, 56, 67, 68, 71; the Royal Society, 131-132.
- Edinburgh University, 59-61, 67; Chemical Society, Ray elected Vice-President, 68; Doctorate for

- Ray, 71; excursions, 93-94; ter-centenary, 538-539.
- Education, insane craze for University, 259, *et seq*; aim of, 303; and mother-tongue, 289-91.
- Education Department, Bengal, 74, 79; Ray and, 80-82; Indians and higher service, 78-79; "Reorganisation scheme" and Late A. M. Bose's speech, 155-58.
- Elliott, Sir Charles, 81, 112.
- Emerson, quoted, 84, 144, 185, 210, 283-284, 310.
- Erdmān, 132.
- Essay and Discourses*, 225.
- Essay on India*, 61-67.
- Expert knowledge *vs.* business, 329-333.
- Faridpur, food deficit in Bengal, 421; agricultural wealth of, 422; economic condition of, 423-425.
- Ferdandes, F. V., 182.
- Fischer Emil, 134.
- Fishmongers' Company, Ray at the banquet, 178.
- Ford, Henry, on mechanisation, 380-381.
- Foreign Degree, glamour of, 310, grave wastage, 311; and prestige, 315; and Indian University alumni, 312-314.
- Frankland, 132.
- Franklin, Benjamin, Ray's special favourite, 30; his life and scheme, 211-212.
- Fraser, Thomas, 60.
- Fuller, Sir B., 162, 198-199.
- Fusion of races and Hindu society, 517-529.
- G. C. Ray and Bros., Ray as book-seller, 535.
- Gandhi, Mahatma, in loin cloth, 56; Ray meets, 126-127; first appearance on the Calcutta platform and Ray, the Albert Hall meeting, 127-128, his method, 222-223; 361; machinery and, 387-388, 392, and mill-owner, 480; Rabindranath on, 531.
- Ganesh Prasad, 207.
- Ganguly, Atul Chandra, 160-161.
- Gay-Lussac, 134, 165.
- Ghosh, Atul Chandra, 161.
- Ghosh, Jnanendra Chandra, 167, 173, 182, 185, 196; Ghosh's Law, 197.
- Ghosh, Jyotish Chandra, 235.
- "Kunja Lal, 235.
- Lal Mohon, 537.
- P. N., 207.
- Ram Gopal, 20-21, 146.
- "Rash Behari, 205-206; Ghose deed of gift, 196; second endowment, 203.
- "Sisir Kumar, 1, 86.
- Gibson, Dr. John, 60.
- Gilchrist Scholarship, and Ray, 48-49.
- Gokhale, G. K., 123; Ray on 123-126; on Ray, 124; as fellow-passenger, 126, 127; 203; as speaker, 538.
- Goswami, Kshetramohan, 9.
- Guha, Bires Chandra, 194.
- Guha, Prafulla Chandra, 182-183.
- Gwynn, G. T., the special correspondent of the *Manchester Guardian*, 242, 250.
- Haldane, quoted, 217, 541-542; a parallel case, 230.
- Hankin, on America, 268, 277.
- Hardy, Mrs., on modern civilisation, 391-392.
- Hare School, 26, 28-29; relation with teachers, 41-42.
- Hartog Commission, Interim report on education, 262-263.

- Hazlitt, quoted, 497.
 Healy, T. M., 537.
 Helmholtz, 516, 539.
 Heredity and environment,
 Eugenics, and Ray, 531-536.
 Hindu Orthodoxy, revival of, fatal
 to the progress of India, 529-531.
 Hindu society, Ray on, 31, 148-149;
 caste system and, 502 *et seq*;
 hereditary untouchables, 507; non-
 co-operation with vengeance, 510;
 exclusiveness and blindness of the
 backward communities, 520-521.
History of Hindu Chemistry, 34,
 119; appreciations of, 119-122; 329.
 Second volume, 163-164.
 Holland, Sir Thomas, 113.
 Hukumchand, Sir S., 278, 332.
 Hunter, W. W., on Bengal "the
 milch cow", 428, 431, 432.
- Iddesleigh, Lord, 61, 539.
- India, Government of, and Science
 College and, 199-206; caste-ridden,
 502, 508-511, 513.
- Indian Association for the Cultiva-
 tion of Science, and Dr. Sircar, 77,
 149.
- Indian Chemical Society, its genesis,
 188, 192; Ray and, 194-195.
- Indian Medical Congress, stall for
 the Bengal Chemical at, 105.
- Indian National Congress, 125;
 resolution on Education Service,
 155; Ray, ten minutes' president
 of, 230.
- Indian School of Chemistry, evolu-
 tion of, 169-70, 185-188; fresh
 recruits, 192-194.
- Indian shipping, 355-356, 358; indi-
 genous ship-building, 359-360.
- Indian University alumni, 313-315.
- Indigenous Banking, and the
 Bengalis, 441-444.
- Indigenous drugs, and Bengal
 Chemical, 104-105; Bose and Kar
 for, 104.
- Industry, war and, 316-319; modern,
 327-329; chemistry and, 325-327;
 and state, 342-344; Melcheltt on,
 331.
- Industry precedes Technology, 316
 et seq; case of China, 319-324.
- Institute of Science at Bangalore,
 198, 200-202.
- Insurance Companies, drain of
 Bengal's wealth by, 483-487.
- Investments, 430-431.
- Irrigation, and the Mahomedan
 rulers, 418-419; excavation of
 tanks, 14-16; and Bankura, 414.
- James, H. R., on Ray, 180-181; Ray
 on, 183-184; 185.
- Jack, quoted, 448.
- Japan, national government of, for
 infant industries, 342-344; mer-
 cantile marine, 352-354; social
 changes in, 511-512.
- Jennings, Mr., 185.
- Journal des Savants*, Berthelot's
 article, 117-118; on *History of*
 Hindu Chemistry, 119-120.
- Jute Industry, 401-402; effect of
 jute cultivation, 403-405.
- Kabibhusan, Pandit Navakanta, 118.
- Kar, R. G., 104.
- Kelly, Dr. and Mrs., Ray with at
 Edinburgh, 67-68.
- Khadi Pratisthan*, 376.
- Khaira endowment, 203-204.
- Khulna, 76; Famine and Ray, 234-
 235.
- Knowledge*, on Ray, 119.
- Labour-saving devices, 384-387.
- Lafont, Father, 149.

- Lahiri, Ramtanu, 2, 24.
 „ Prasanna Kumar, 47.
 Laski, H., quoted, 229, 299-301.
 Lavoisier, 134, 218.
 Laws of health, Ray on, 37.
 Lèvi, Sylvain, Ray with, 135-136;
 on Ray, 164.
 Lippman, Von, 122.
 London, Ray at, 53-54, 131, 173-179;
 Lord Mayor's banquet, 179.
 London Chemical Society, 122; Ray
 read a paper before, 173-174; 195,
 317.
London Times, on Bright's letter to
 Ray, 64.
 Lorenz, Prof. Richard, 134.
- Macauley, his peroration, 78;
 famous minute, 142, 292; 209-210;
 quoted, 264-265.
 Macdonald, Ramsay, on Railways
 and Famine in India, 407-408;
 427; early life, 269, 284-285.
 Machine, driving men out of work,
 381-384; curses of, 385-386; Gandhi
 and, 387-388; superior tools and
 starvation, 393.
Maidan, walk, 167; club, 224, 226.
 Maitra, Heramba Chandra, 86, 89,
 226.
 Maitra, Pramatha Nath, 426.
Makers of Modern Chemistry,
 extracts from, 165-166.
Manchester Guardian, the, the
 special correspondent on the flood
 relief-work of 1922, 242-247; on
 the eclipse of Bengal, 471-473.
 Manning, Miss E. A., 54.
 Manual work held in contempt, a
 great national danger, 282-288.
 Maritime Activity, and awakening
 of political consciousness, 513-517.
 Marshall, Hugh, 61; how became
 famous, 70.
 Martin, 158-159.
- Marwaris, 90, 463-464; and Bengal
 trade, 444-446, 474, 476, 477; sepa-
 rated from the Bengalis and their
 social outlook, 519-520; misdirected
 charities, 521-522, 527-529.
 Masaryk, 287, 295; outlook on edu-
 cation, 302-303; 306, 504.
 Mass Production of graduates, 259-
 263.
 Mechanisation, Ford on, 381; mecha-
 nical civilisation and China, 385;
 and U. S. A. 389-390.
 Medium of instruction, 289, 290;
 bilingualism, 295-299.
 Melchett, Lord, on modern industry,
 327, 331, 334; 518.
 Mercantile marine in Bengal, past
 and present, 347-358.
 Mercurous Nitrite, discovery of, 113-
 114; first paper, 152.
 Meston Award, and drain of the
 wealth of Bengal, 435-439.
 Metropolitan Institution, 46-48.
 Meyer, Victor, 114.
 Meyerhofer, 132.
 Mitra, Digambar, 9, 10, 19.
 „ Peary Chand, 21, 146.
 „ Prafulla Chandra, 180, 196,
 242.
 „ Rajendra Lal, 19, 146.
 „ S. K., 207.
 „ Susil Kumar, 194.
 „ Yadav Chandra, 95, 102.
- Monahan, F. J., 296.
 Monroe, on China, 386.
 Modern civilisation, Howard on,
 388; the underworld, 389.
 Mossian, 136; 137.
 Muir, Sir W., 62; on Ray, 63; 73.
 Mukherji, Asutosh, 154-155; letter
 to Ray and the Science College,
 179-180; 196; his desperate efforts
 to secure grant, 198-199, 203.
 Mukherji, Janendra Nath, 167; in
 Colloid Chemistry, 172; 173, 182,
 185, 194, 196.

- Mukherji, Jogesh Chandra, on the failure of the Bengalis, 491-493.
- Mukherji, Sir R. N., 278.
- Muslim Pirs, 3.
- Mussolini, on state schools, 281-282; life, 286-287; on University, 301.
- Mysore Convocation Address, by Ray, 307-309.
- Nandy, Manindra, 196; in "Pottery Works", 337, 340.
- Nature*, 119; on Ray's paper, 174; on the Indian School of Chemistry, 185-186; on Ray's life-work, 225; on Berthelot's funeral, 137.
- Nature Club, 89.
- Nature Study, Ray in, 87-89.
- Neogi, Panchanan, 160.
- Newmann, Cardinal, 300-301.
- Nitrite, Ray's paper on, read before Lond. Chemical Society, 173-174.
- Non-Bengali immigrants in Bengal, 463.
- North Bengal Flood, the, 208, 238; Bengal Relief Committee's Work, 239-242.
- Organic Chemistry, Ray on, 171-172.
- Ostwald, 69, 172.
- Over-production and consequent unemployment, 379-381.
- Pakrasi, Ayodhyanath, 30.
- Pal, Bholanath, 29.
- „ Bhutnath, of Butto Kristo Paul & Co., 93, 106.
- Palit, Tarak Nath, 199, 205-206.
- Palit Trust Deed, 196.
- Paris, Ray at, 134-137.
- Pasteur, quoted, 70; 538-539.
- Peasantry, of Bengal, 403, 425; ruinous craze of the, 405-406; indebtedness of the, 407.
- Pedler, Sir Alexander, 47, 77, 78, 83-84, 112-113, 129-130.
- Perkin, 132.
- Physical Chemistry, pioneers of, 69; Dhar, Mukherji, Ghosh in, 172-173; Bhatnagar on the researches of, 186-188.
- Plassey Drain, 432-435.
- Playfair, Lord, 73, 195.
- Primer of Zoology* in Bengali, 89.
- Presidency College, 47, 77; Ray at, 80; new chemical laboratory, 112-113; brilliant group of students, 167; chemical research at, 160-173, 182-183; retirement from, 188; 304, 317-318.
- Porcelain manufactory, 319-321.
- Prohibition of sea-voyage—its repercussion on Hindu India, 513, 517.
- Public Service Commission, recommendations of, 79, 81.
- Quasi-political Activity, Ray in, 227-233.
- Railway embankments and floods, 236-238; Bentley on, 237.
- Rakshit, Jitendra Nath, 167-170.
- Raman, C. V., 202, 207.
- Ramsay, William, 131, 132, 174, 184.
- Raruli, 1, 10; village school, 19.
- Rây, Ananda Lal, grandfather, 6; his sradh ceremony, 25.
- Rây, B. B., 207.
- Rây Chowhuris of Bodhkana, 2.
- Rây, D. N., 50-51.
- Rây, Haris Chandra, father, 1, 2; intellectual equipment, 8-9; fond of music, 9; acquaintances, 9; his income, 10-11; loan office, 11; for widow-remarriage movement, 24-25; cordial relation with his sons, 27-28; pecuniary embarrassment, 45-46; his death, 109.

Rây, J. N., 193.

Rây, Jatin, 241.

Rây, Manik Lal, the great-grandfather, wealth, 6-7; culture, 9.

Rây, Prafulla Chandra,—

Early life and education :—

Birth, 1; family history, 2-4; mother, 8, 46, 49, 76; ancestral house, 8, 11-12; village school, 19; his first impressions of Calcutta, and his removal, 19-20, 26; relation with his father, 27-28; his intellectual equipment, 27-28; faith and Brahmo Samaj, 30-31.

Hare School, 26, 28-29; the teachers, 41-42; attack of dysentery and eventful year of his life, 31-38; passion for study and learning new languages, 33-38, 305.

Albert School, 39; influence of Brahmo teachers, 42-44; his love of English literature and Krishna Behari Sen, 44.

Metropolitan Institution, 46-48; external student at the Presidency College, 47; blow-pipe incident, 48; Gilchrist scholarship, 48-49.

Departure for Europe, 50-54; at London, 53-54; "Indian robe" incident, 55, 68.

Edinburgh, life at, 56-57, 67, 68, 71.

Edinburgh University, 59-61; Essay competition, 61; his *Essay on India*, 61-67; *London Times* and Bright's letter to, 64; Thesis for doctorate, Hope prize, 68; elected Vice-President of Chemical Society, 68; Doctorate in Inorganic Chemistry, 71; teaching and laboratory work, 70-71; tercentenary, 538-539.

Tour in the Highlands, 71-73.

Home coming, 75; meets mother, 76; dream at Edinburgh, Clairvoyance, 76-77.

Hospitable roof of Dr. and Mrs. Bose, 80.

Career as Professor :—

Appointment at the Presidency College, 80; making of a teacher, 82-84; way of his lecturing, 83, 304, 305.

Research on food-stuffs, a paper published, 84-85.

Insomnia and change at Deoghar, 85-87.

Nature Study and Nature Club, 87-89; wrote *Primer of Zoology* in Bengali, 89.

Pharmaceutical preparations and the Bengal Chemical Works, 92-111; purchase of Sodepur Acid Works, 102.

Death of his father, 109.

The new chemical laboratory, 112-113;

Discovery of mercurous nitrite, 113-114; analysis of minerals, 113.

Researches in the history of Hindu Chemistry, 115, 118-119; correspondence with Berthelot and the article in *Journal des Savants*, 115-118.

History of Hindu Chemistry and its appreciations, 119-122.

Hony. D.Sc. of Durham University, 120-121.

Meeting with Gokhale, 123-126; with Gandhi, 124; responsible for Gandhi's first appearance on a Calcutta platform; the Albert Hall Meeting, 127-128.

Second visit to Europe, 129-131; at Davy-Faraday Research Laboratory, 131; visit to research laboratories of Europe,

- 131-137; dinner at the Royal Society, Edinburgh, 131-132.
 Return to Calcutta, 137; "Partition" and awakening of Bengal, 138-139.
 "Reorganisation Scheme" and in the proper grade, 158; offered Principalship of Rajshahi College, his refusal, 158-159.
 Cunningham incident, 161-163.
 Second volume of *History of Hindu Chemistry*, 163-164.
 Chemical research in Bengal, 160-161, 167-173; the brilliant group of students, 166-167.
 Delegate to the First Congress of the Universities of Empire at London, 173-174, 175-176; paper on ammonium nitrite, read before the Chemical Society; Ramsay, Velej, Roscoe and *Nature* on the paper, 173-174; visit to Cambridge and Sheffield Universities, 176-178; anniversary of the Royal Society and other functions, 178-179; Asutosh Mukherji's letter, 179-180; "at home" on his return, 180-181.
 Indian School of Chemistry, slow evolution, 169-170; *Nature* on, 185-186; Dr. Watson and his pupils, 191-192; fresh recruits, 192-194.
 Indian Chemical Society, formed, 194-195.
 Retirement from the Presidency College, 188-191.
 University College of Science, 196; poor equipment and Asutosh's efforts, 196-197, 203; Ghose, Palit and Khaira endowments; Government's attitude, 198-203.
 Rây on the "State and the University" at 3rd Congress of the Universities, 204-206; 207.
Quasi-political activity, 228-233.
Social Service Activity:—
 Khulna Famine and Relief Work, 234-235. 2
 Bengal Relief Committee and the North Bengal Flood of 1922; 236-242; *Manchester Guardian* and Andrews on, 242-249.
The Sankat Tran Samity, and the recent floods, 249-254.
 His daily routine, 213-216.
 Active period of his life, 223-226.
 Maidan Club, 167, 224, 226.
 Men he has seen and heard, 537-539.
Industrial enterprises:—
 Bengal Chemical and Pharmaceutical Works, 92, *et seq.*
 Sodepur Sulphuric Works, 102.
 Calcutta Pottery Works, 337-342.
 Bengal Enamel Works, 345-347.
 Bangiya Steam Navigation Co., 360.
 G. C. Ray & Bros., Publishers and Book-sellers, 535.
 Rây, P. K., 50.
 Rây, Priyadarajan, 192-193.
 Rây, Ram Mohan, 55, 78; spirited letter to Lord Amherst, 140-141, 294; maker of modern Bengal, 142; 150, 532.
 Rây, Tarapasanna, 149.
 Reorganisation scheme and the education service, 155, 158.
 Research scholarships, 160, 184-185; scholars, 160-161, 167-171, 173, recognition abroad, 182-183.
 Richardson, D. L., 2, 29.
 River-borne trade in Bengal, 397-398.
 Roscoe, 114, 174.
 Rosebery, Lord, 175, 537.

Rowlatt Act, agitation, 230-232.

Royal Institute of Science, Bombay, 202-203.

Royal Society, Ray attends the 250th anniversary, 179.

Rungpur, economic condition, 426-427.

Saha, Megh Nad, 167, 182, 196; Saha's equation, 197-198; on Bangalore Institute, 201-202; and floods, 242, 249.

Samachar Darpan, 9; lament of the spinner, 377-378.

Sankat Tran Samity, the, and recent floods, 249-255.

Sanyal, Rambrahma, 89.

Sarkar, Bipin Behari, 89.

„ Nalini Ranjan, 279.

„ Nilratan, 89, 104, 123, 169, 226.

„ Peary Charan, 28.

„ Pulin Behari, 167, 193.

Sarvadhikary, D., 50; delegate to the Congress of Universities of the Empire, 173, 175-176.

Sarvadhikary, Suresh Prasad, 104.

Sastri, Rt. Hon. Srinivas, 125.

Scheele, quoted, 114.

Schelenz, Herman, 121.

Scindia Steam Navigation Co., 351, 353, 355.

Seal, B. N., 163.

Secondary Education, defects in, 289.

Sen, Baikuntha Nath, 337, 342.

„ Hemendra Kumar, 170-171, 194.

„ Hemendra Nath, 337, 342.

„ Indra Narayan, 241.

„ Jatindra Nath, 160.

Sen, Keshab Chandra, 19, 30, influence on Ray, 31; 39, 43; Ray on, 538.

Sen, Krishna Behari, 35, 39-41, 43; his influence on Ray, 44.

Sen, Mon Mohan, 194.

„ N. R., 207.

„ Nagendra Nath, 235.

„ Narendra Nath, 43, 127.

„ Pares Nath, 226.

„ Ramdas, 34.

Sharp, Sir Henry, 198, and Science College, 199.

Sheffield University, Ray's visit to, 177-178.

Sinha, Col. N. P. & Lord, 53.

„ Satishchandra, 107-108.

Singh, B. K., 192.

Sircar, Mahendra Lal, 77, 149; on *History of Hindu Chemistry*, 120.

Smith, Alexander, 60-61.

Smithells, 132.

Social Service Activity, Ray in, 234-250.

Spencer, Herbert, and books, 217, 518; quoted, 303.

Sugar Industry in Bengal, 399-401, 482; Colebrooke and Westland on, 399-400.

Sukkur Barrage Scheme, 415.

Sulphuric Acid Works, Sodepur, 95-96; purchase by Ray, 102; 109-111.

"Sunset Law", 5, 21, 414.

Sutcliffe, James, 29.

Tagore, Devendra Nath, 9, 30, 142.

„ Jatindra Mohan, 9.

„ Rabindra Nath, 33; on Gandhi & Hindu Society, 531.

„ Sourindra Mohan, 9.

Tanks, excavation of, 14-16.

Tata Iron Works, 318, 328-329; and protection, 480-482.

Tata, J. N., 198, 328, 525.

Tawney, Charles H., 74, 80, 112.

- Technische Hochschule, Ray's visit to, 132, 332.
- Technology before Industry, 316, case of China, 319, 322-324; in India, 329, 331-333; 335.
- Thenard, 134, 164.
- Thomson, Sir Joseph, 175.
- Thrope, Sir Edward, 225.
- Time, use and misuse of, 208 *et seq.*
- Travers, 110-111, 131.
- Troost, President M., 135-136.
- Trusts and Dumping, 325-327.
- University, the true functions of a, 299-309.
- University College of Science, 196 *et seq.*
- University education, insane craze for, 259 *et seq.*; a handicap to success in business, 271-282.
- University graduates *v.* self-taught men, 264-271.
- Van't Hoff, 69; Ray with, 132-133; 172.
- Veley, V. H., 174.
- Vernacular, neglect of, 292-294.
- Vidyabagis, Mohanlal, 24.
- Vidyasagar, Iswar Chandra, 9, 46; for modern Bengali literature, 145-146.
- Village life, early, 409-411.
- Volhard, 114.
- Waldie & Co., D., 94-95.
- Walker, James, 60, 68, 132.
- Watson, Prof., 182, his pupils, 191.
- West, M., on bilingualism, 292, 295-296.
- Western civilisation and our ruin, 370-374.
- Westland, quoted, 14-15; on sugar industry of Bengal, 399.
- Whiteman's Burden, 254, 416.
- Willcocks, W., on Bankura, 417-418.
- Windsor Palace, reception at, 179.
- Wynne, Prof., 195.
- Young, Captain of S. S. *California*, 50-52.
- Zeitschrift für anorganische, 134.
- Zurich polytechnic, Ray's visit to, 134.

